

2012/2013

- ULT Freezers
- Shakers
- CO₂ Incubators
- Fermentors
- Bioreactors and More



New Brunswick
an eppendorf company

NEW!
HEF® Models



“Must-see” quality

Built into every New Brunswick ULT Freezer

New Brunswick Ultra-Low-Temperature (-86 °C) Freezers have set new standards for quality for over 30 years. From high-grade seals and compressors to individual inspection and performance testing of EVERY freezer before delivery to you.

No other freezers offer the same combination of high performance, sample security, convenience, and energy efficiency. And, they're now available in three product ranges:

- **New! HEF® High Efficiency Freezers**
reduce energy consumption by up to 59% compared to competitive models*
- **Innova® Space-Saving Freezers**
provide up to 30% more capacity than traditional freezers, in about the same footprint
- **Premium Freezers**
provide safe sample storage at an economical price

New Benchmark. New Brunswick.



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New Benchmark. New Brunswick.

New 2012 - 2013 catalog

For over six decades, New Brunswick lab equipment has been setting new standards for design innovation, performance, and reliability. And the tradition continues, with the hundreds of orbital shakers, CO₂ incubators, ultra-low temperature freezers, fermentors, bioreactors and accessories shown within these pages.



We hope you find the new format of our catalog even easier to use. Should you ever need it, this catalog as well as our many brochures and manuals are posted online for easy access.

The eco-logical choice™

We're proud to produce Ultra-Low Temperature Freezers that are among the most energy-efficient in the industry. HEF® High Efficiency Freezer models are the greenest of them all. For facilities concerned about global warming and the impact of energy usage on the environment, New Brunswick Freezers are the eco-logical choice. Turn to page 6 to learn more or visit www.nbsc.com/freezer for an interactive virtual-product tour.



New single-use systems and adapter kits for cell culture

Have you been considering switching to a single-use bioreactor, but can't afford to replace your existing autoclavable system? Now you don't have to. Our new adapter kits for New Brunswick and competitive bioreactor controllers allow you to take advantage of our CelliGen® BLU single-use vessel technology. See page 90 for details.

We've moved!

We've recently moved to a new world-class facility in the U.S. to provide faster order-to-shipment delivery, as well as improved pre- and post-sales support to our customers worldwide.

Our newly-built world headquarters in Enfield, Connecticut, U.S.A. houses New Brunswick's customer service and applications support teams as well as new product development and manufacturing. New laboratories for research, development and applications work as well as hands-on customer training are an integral part of the facility. The new building expands Eppendorf's manufacturing facility in Enfield, and is a natural progression of our 2007 merger with Eppendorf AG, (Hamburg Germany).

New Brunswick freezers – the eco-logical choice for the environment and your lab.

In the Netherlands, we recently completed an extensive warehouse expansion and upgraded our systems management to provide even better service to our customers within Europe. The Nijmegen facility is the European logistics hub for New Brunswick products, responsible for the distribution and storage of finished goods and replacement parts.

If you're ever in either area, we welcome you to tour our facilities. Meantime, we look forward to supporting you with our wide range of innovative life science products.

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New Brunswick freezer overview

Three lines. Over a dozen models. All energy efficient and reliable. Which one is right for you?

Space-Saving Innova® freezers – provide up to 30 % more storage capacity than freezers of equal size. The space savings are achieved by using thermally-superior vacuum insulation panel technology in combination with traditional urethane foam insulation to reduce the wall thickness from 130 mm to just 80 mm.

Economical Premium freezers – offer the same top-quality construction and many of the same advanced features as the Innova line, but use conventional foam insulation for a cost-saving alternative.

High Efficiency, HEF® and Green freezers – These freezers reduce energy consumption by up to 35 % compared to Premium models, making them among the most energy-efficient in the market today. Compare these savings to any other freezer and the choice will be clear. Offered in four sizes.

Accessories – a wide array of back-up systems, racking and more are offered.



- Industry-leading energy efficiency; and the new HEF® line reduces consumption even further.
- Specialized low-temperature door gaskets and seals to prevent cold air loss.
- A single, quiet, energy-efficient condenser fan.
- Efficient control system to reduce compressor cycling times.
- Non-global warming hydrocarbon refrigerants in the 50 Hz Green and HEF lines.
- Refrigerants that do not contain CFC or HCFC gases to reduce greenhouse gases.
- CE and UL certified, and meets WEEE directives.

Five considerations when selecting a ULT freezer

True value is often determined by more than just price. When it comes to the safe storage of your samples, you may want to consider these factors:

Reliability

New Brunswick freezers use only the very best quality components to ensure reliability, including:

- High-quality compressors to ensure longevity and maintenance-free operation.
- Control systems designed to maximize performance while minimizing compressor stress.
- Durable gaskets to maintain a proper seal and reduce icing.

Performance

New Brunswick Freezers offer these advantages:

- Rapid “pull down” – the time needed for your freezer to return to setpoint after door opening – to maintain sample integrity.
- Superior temperature uniformity to ensure all samples are well protected.
- Insulated inner doors to minimize cold loss during sample access, for rapid temperature recovery and sample stability.

Energy efficiency

Because they run 24/7 and need to maintain very low temperatures, ULT freezers are traditionally high-energy consumers. With today's high cost of electricity, and a renewed focus on the environment, minimizing energy usage is paramount. Therefore, New Brunswick freezers feature:

Footprint

With the high cost and low availability of lab space, your ULT freezer should seamlessly integrate into your space without being physically or audibly obtrusive.

- Innova models provide up to 30 % more storage capacity than freezers of equal size, by utilizing vacuum insulation paneling.
- All New Brunswick freezers offer significant advantages in exterior width and depth dimensions, allowing them to be easily integrated into laboratories and hallways.
- Low noise output means the units will be less obtrusive.
- Novel-sized Innova U101 and U360 models fit in the tightest of spaces.

Customer service

Because an entire department's work can be stored in one ULT freezer, any problem with the system requires an immediate response. Therefore, your freezer vendor should be your partner, not just a supplier. New Brunswick Freezers are supported by:

- A global, dedicated team of customer service and technical service technicians to provide a courteous and rapid response.
- A network of highly-trained service personnel that can quickly respond to critical issues.

New Brunswick ULT freezers – the eco-logical choice™!

Go green and save operating costs and the environment with New Brunswick ultra-low temperature freezers.

New Brunswick -86 °C freezers are among the most energy-efficient in the industry, reducing energy consumption by thousands of kilowatt hours over our competition. Additionally, New Brunswick freezers are 95 % recyclable by weight, so they can be disposed of in an environmentally friendly manner with very little impact to the environment.

And, with models in ten sizes, 101 – 725 liters, you'll never have to buy a freezer larger than you actually need, further reducing energy usage, operating costs, and the carbon footprint.

What is a carbon footprint?

One way to measure the amount of pollution produced is by calculating your carbon footprint – the amount of carbon dioxide (CO₂) produced through burning fossil fuels for electricity. For simplicity, CO₂ is expressed in tons emitted per year.

Offset with New Brunswick freezers

The standard rule of thumb is you produce 351 grams of carbon dioxide with each kilowatt hour of electricity you use. In other words, for every kilowatt hour of electricity you **DO NOT** use, you save 351 grams of carbon dioxide from entering the atmosphere.

On average, by selecting a New Brunswick freezer over a competitive unit, you can save up 10 metric tons of CO₂ from entering the atmosphere over the lifetime of the unit. In comparison, when you switch from halogen light bulbs to compact fluorescent bulbs, you save 45 kilograms of CO₂ per bulb per year. The average vehicle traveling 15000 kilometers each year consuming 5.5 liters gasoline per 100 km emits more than 2310 kilograms of carbon dioxide per year.

Not only do you help save the environment, but also substantially reduce your operating costs. To see how much you can save, see the worksheet below.



Less power consumption. Smaller carbon footprint. Save using New Brunswick freezers.

New Brunswick freezer model	Capacity (L)	kWh/Day New Brunswick freezers	kWh/day competitor's freezer	kWh/day savings with New Brunswick freezer	Average cost per kWh**	New Brunswick energy savings over 10 years	Reduction in CO ₂ emission tons over 10 years***	Energy savings for 25 units over 10 years
Innova U360 ²	360	11.7	19.1	7.4	€ 0.15	€ 4,051.50	9.5	€ 101,287.50
Innova U725-G*.1	725	15.2	22.4	7.2		€ 3,942.00	9.2	€ 98,550.00
Innova U725 ²	725	16.4	28.6	12.2		€ 6,679.50	15.6	€ 166,987.50
Premium U410 ²	410	13.0	19.2	6.2		€ 3,394.50	7.9	€ 84,862.50
HEF U410 ²	410	8.6	19.2	10.6		€ 5,803.50	13.6	€ 145,087.50
Premium U570 ²	570	14.1	21.0	6.9		€ 3,777.75	8.8	€ 94,443.75
HEF U570 ²	570	12.2	21.0	8.8		€ 4,818.00	11.3	€ 120,450.00

¹ 50 Hz

² 60 Hz

* Hydrocarbon based model

** according to the European Commission eurostat

*** electricity sources in Europe emit 350.9 g CO₂ per kWh, according to the International Energy Agency (IEA)

New Brunswick freezer guide

Innova (page 11)

Freezers	Upright				Chest		
							
Model	U101	U360	U535	U725	C585	C760	
Page	12	13	14	15	16	16	
Technical specifications							
Capacity (Liters)	101	360	535	725	585	760	
External dimensions (H x W* x D) cm**	83 x 90 x 56.6	195 x 67 x 86.7	195 x 80 x 86.7	195 x 102.5 x 86.7	109.2 x 169 x 78.5	109.2 x 205 x 78.5	
Net weight (kg)	116	230	250	315	240	285	
Voltage	230 V, 50 Hz	230 V, 50 Hz	230 V, 50 Hz	230 V, 50 Hz	230 V, 50 Hz	230 V, 50 Hz	
Plug provided	Schuko & UK	Schuko & UK	Schuko & UK	Schuko & UK	Schuko & UK	Schuko & UK	
Full load amp draw (A)	5	6.5	5	9.5	5.5	9.5	
Performance data							
Power consumption kWh/day	8.8	10.7	13.2	15.8	13.6	16	
Heat Output (Watts)	440	590	720	750	700	750	
Pull down time (hrs)***	3.7	5.6	5.3	5.6	4.5	5.8	
Voltage stabilizer, external	Optional	Optional	Optional	Optional	Optional	Optional	
Caster wheels	Standard	Standard	Standard	Standard	Standard	Standard	
Capacity							
Freezer racks							
Max racks per shelf	3	3	4	6	N/A	N/A	
Number of shelves	2	3			N/A	N/A	
Max racks per freezer	6	9	12	18	32	44	
Rack dimensions (H x W x D) cm	29.25 x 14.1 x 30.8	41.05 x 14.1 x 56.5			75.2 x 13.9 x 13.6		
Box capacity per rack							
5 cm box (H)	10	28			13		
7.5 cm box (H)	6	20			9		
10 cm box (H)	4	12			6		
Box capacity per freezer							
5 cm box (H)	60	252	336	504	416	572	
7.5 cm box (H)	36	180	240	360	288	396	
10 cm box (H)	24	108	144	216	192	264	
Sample capacity							
5 cm box (H)	6,000	25,200	33,600	50,400	41,600	57,200	
7.5 cm box (H)	3,600	18,000	24,000	36,000	28,800	39,600	
10 cm box (H)	2,400	10,800	14,400	21,600	19,200	26,400	

* Door open adds up to 15 cm.

** To allow for handles and hinges, add 80 mm to width of upright freezers and 110 mm to the depth of chest freezers.

*** To -85 °C, empty freezer, from 20-25 °C ambient conditions.

New Brunswick freezer guide

Premium (page 18)				
	Upright		Chest	
				
	U410	U570	C340	C660
	19	20	21	21
Technical specifications				
	410	570	340	660
	191.5 x 80 x 85.2	192.5 x 102.5 x 85.25	107.5 x 134 x 84	107.5 x 205 x 84
	235	265	205	280
	230 V, 50 Hz	230 V, 50 Hz	230 V, 50 Hz	230 V, 50 Hz
	Schuko & UK	Schuko & UK	Schuko & UK	Schuko & UK
	5	6	4.5	6
Performance data				
	12.6	13.6	8.8	14.3
	650	700	580	650
	5.4	5.6	5.5	5.0
	Optional	Optional	Optional	Optional
	Standard	Standard	Standard	Standard
Capacity				
Freezer racks				
	3	5	N/A	N/A
	5		N/A	N/A
	15	25	20	40
	23.5 x 14.1 x 56.5		75.2 x 13.9 x 13.6	
Box capacity per rack				
	16		13	
	12		9	
	8		6	
Box capacity per freezer				
	240	400	260	520
	180	300	180	360
	120	200	120	240
Sample capacity				
	24,000	40,000	26,000	52,000
	18,000	30,000	18,000	36,000
	12,000	20,000	12,000	24,000

New Brunswick freezer guide

	Green and HEF® (page 23)			
Freezers	Upright			Chest
				
Model	U725-G	HEF U410	HEF U570	HEF C660
Page	24	25	26	27
Technical specifications				
Capacity (Liters)	725	410	570	660
External dimensions (H x W* x D) cm**	195 x 102.5 x 86.7	191.5 x 80 x 85.2	192.5 x 102.5 x 85.2	107.5 x 205 x 84
Net weight (kg)	315	262	296	304
Voltage	230 V, 50 Hz	230 V, 50 Hz	230 V, 50 Hz	230 V, 50 Hz
Plug provided	Schuko & UK	Schuko & UK	Schuko & UK	Schuko & UK
Full load amp draw (A)	9.5	5	6	6
Performance data				
Power consumption kWh/day	15.2	8.4	8.9	11.4
Heat Output (Watts)	730	505	520	580
Pull down time (hrs)***	5.4	5.6	5.5	5
Voltage stabilizer, external	—	Optional	Optional	Optional
Caster wheels	Standard	Standard	Standard	Standard
Capacity				
Freezer racks				
Max racks per shelf	6	3	5	N/A
Number of shelves	3	5	5	N/A
Max racks per freezer	18	15	25	40
Rack dimensions (H x W x D) cm	41.05 x 14.1 x 56.5	23.5 x 14.1 x 56.5		75.2 x 13.9 x 13.6
Box capacity per rack				
5 cm box (H)	28	16	16	13
7.5 cm box (H)	20	12	12	9
10 cm box (H)	12	8	8	6
Box capacity per freezer				
5 cm box (H)	504	240	400	520
7.5 cm box (H)	360	180	300	360
10 cm box (H)	216	120	200	240
Sample capacity				
5 cm box (H)	50,400	24,000	40,000	52,000
7.5 cm box (H)	36,000	18,000	30,000	36,000
10 cm box (H)	21,600	12,000	20,000	24,000

* Door open adds up to 15 cm.

** To allow for handles and hinges, add 80 mm to width of upright freezers and 110 mm to the depth of chest freezers.

*** To -85 °C, empty freezer, from 20–25 °C ambient conditions.

Innova® freezer features

Description

Space-saving Innova Freezers offer up to 30 % more internal capacity than freezers of equal size. Six models are offered, U101, U360, U535, U725, C585 and C760. Vacuum insulation paneling reduces wall thickness providing up to 30 % more storage capacity than traditionally-insulated freezers, without impacting footprint.



Innova U101, unique on or under the counter freezer is ideal for clinical trials or labs short on space



Innova U360, ultra-slim U360 is just 67 cm wide including the handle



Innova U535 offers 535 liters of storage space



Innova U725 offers the most capacity (725 liters) and is the most popular Innova upright



Innova C585 offers 585 liters of storage space



Innova C760 is the largest chest freezer available from any manufacturer at 760 liters

Product features

- Quick pull down and recovery times with reliable heavy-duty compressors
- Inner doors in upright models are gasketed and insulated creating three separate compartments minimizing cold air loss while accessing your samples (two in U101)
- Inner doors can be quickly removed without tools for easier defrosting
- Adjustable height shelves for storage flexibility. Each shelf is adjustable in 1.3 cm increments
- High-grade seals for outer door on all upright and chest models allow for rapid temperature recovery
- Stainless steel interior is easily cleaned and eliminates the possibility of oxidation
- Significantly reduced noise levels achieved through advanced compressor housing with noise-reducing insulation enabling placement of the freezer directly in your work area
- Unique heated air vent with plunger to clear ice buildup and to relieve vacuum formation to gain immediate access to the freezer
- SMART Plus™ diagnostics which allows system engineers to diagnose most issues over the phone, saving you time and money
- Each freezer slides effortlessly through a standard doorway simplifying installation
- Easy-to-read LED display with display of system alarms and diagnostics
- Advanced security features include four-digit password to protect temperature and alarm settings; keyed door lock with optional padlock adapter; lockable security plate to protect power and alarm on-off switches; and remote alarm contacts for connection to your external building alarm/monitoring system

Innova® U101 upright freezer



Product features

General product features of the Innova family are listed on page 11. Specific features for Innova U101 include:

- Capacity: 101 L, up to 60 boxes or 6,000 samples
- Under the counter design for immediate access to personal samples and for labs tight on floor space, occupying only 90 x 56 cm of floor space
- For added storage space, an additional U101 can be stacked on top of one another doubling the capacity while utilizing the same floor space
- Engineered with optimal air flow in mind allowing the unit to be placed flush up against the wall

Description

Keep your samples safe, secure and easily accessible with the space saving Innova U101. This unique, personal sized upright freezer packs in all the features of our full uprights into one small package. The U101 fits easily on or under your lab bench or can be stacked two high.



Model U101 is a unique, personal-size upright freezer that fits on or under your lab bench, or stacks two high.

Technical specifications

Description	Innova U101
Insulation type	Vacuum insulation paneling
Electrical	230 V, 50 Hz
Ambient to -85 °C pull down	3.7 hrs
Power consumption	8.8 kWh/day 367 Watts
No. of inner doors	2
No. of cascading compressors	2
Capacity	101 L
Racks per freezer	6
5 cm box capacity	60
7.5 cm box capacity	36
10 cm box capacity	24
External dimensions (H x W x D)	83 x 90 x 56.6 cm
Internal dimensions (H x W x D)	64 x 48 x 33 cm
Net weight	116 kg

Ordering information

Description	Order no.	
U101 under the counter upright, 101 L internal capacity		
230 V, 50 Hz	U9420-0001	⚡
Back-up systems		
LN ₂ * 230 V, 50 Hz	U9044-0004	⚡
CO ₂ * 230 V, 50 Hz	U9043-0004	⚡
U101 racks		
5 cm box (H), 10 boxes per rack	K0641-3003	
7.5 cm box (H), 6 boxes per rack	K0641-3004	
10 cm box (H), 4 boxes per rack	K0641-3005	
U101 stacking kit		
U101 stacking kit	P0625-0020	
Inner shelf	P0625-0180	

* Factory installed at no extra charge if purchased with the freezer at the same time.

Innova® U360 upright freezer



Description

Model U360 provides advanced design and sophisticated controls for labs tight on space. Ultra-slender at 67 cm wide, the U360 is the first of the Innova line to feature our advanced new controller with extra-large display and graphing capability. The U360 offers all the quality construction and system advantages as our original Innova models plus much more.

Product features

General product features of the Innova family are listed on page 11. Specific features for Innova U360 include:

- Capacity: 360 L, up to 252 boxes or 25,200 samples
- Ultra-slender design for labs tight on floor space, occupying only 60 x 86.7 cm
- Bright, eye level backlit LCD display (12 x 6.8 cm) provides immediate review of important parameters “at a glance” from a distance
- On-screen system messaging: displays setpoints, details of alarms, door openings and operating conditions with time-date stamp
- Automated data logging: temperature, alarms and door opening data are stored for up to 30 days, for on-screen graphing
- Flexible alarm programming helps avoid false temperature alarms and allows greater user flexibility in alarm control

Technical specifications

Description	Innova U360
Insulation type	Vacuum insulation paneling
Electrical	230 V, 50 Hz
Ambient to -85 °C pull down	5.6 hrs
Power consumption	10.7 kWh/day 492 Watts
No. of inner doors	3
No. of cascading compressors	2
Capacity	360 L
Racks per freezer	9
5 cm box capacity	252
7.5 cm box capacity	180
10 cm box capacity	108
External dimensions (H x W x D)	195 x 67 x 86.7 cm
Internal dimensions (H x W x D)	136.5 x 44 x 61.5 cm
Net weight	230 kg

Ordering information

Description	Order no.	
U360 ultra-slim upright, 360 L internal capacity		
230 V, 50 Hz	U9425-0001	⚡
Back-up systems		
LN ₂ * 230 V, 50 Hz	U9044-0004	⚡
CO ₂ * 230 V, 50 Hz	U9043-0004	⚡
U360 racks		
5 cm box (H), 28 boxes per rack	K0641-3000	
7.5 cm box (H), 20 boxes per rack	K0641-3001	
10 cm box (H), 12 boxes per rack	K0641-3002	

* Factory installed at no extra charge if purchased with the freezer at the same time.

⚡ **Ordering information for other voltage options begins on page 144.**

Innova® U535 upright freezer



Description

The U535 is a versatile Innova upright. With a footprint occupying 80 x 86.7 cm, it can be placed almost anywhere and still hold a significant number of samples.

Product features

General product features of the Innova family are listed on page 11. Specific features for Innova U535 include:

- Capacity: 535 L, up to 336 boxes or 33,600 samples
- Vacuum insulation panel design occupies virtually the same footprint as a traditionally-foamed 410 Liter ULT-Freezer, but holds over 25 % more samples
- Bright, eye level, easy to read and reach front mounted LED control panel, provides temperature readout and fault codes

Technical specifications

Description	Innova U535
Insulation type	Vacuum insulation paneling
Electrical	230 V, 50 Hz
Ambient to -85°C pull down	5.3 hrs
Power consumption	13.2 kWh/day 550 Watts
No. of inner doors	3
No. of cascading compressors	2
Capacity	535 L
Racks per freezer	12
5 cm box capacity	336
7.5 cm box capacity	240
10 cm box capacity	114
External dimensions (H x W x D)	195 x 80 x 86.7 cm
Internal dimensions (H x W x D)	136.5 x 64 x 61.5 cm
Net weight	250 kg

Ordering information

Description	Order no.	
U535 upright, 535 L internal capacity		
230 V, 50 Hz	U9430-0001	
Back-up systems		
LN ₂ * 230 V, 50 Hz	U9044-0004	
CO ₂ * 230 V, 50 Hz	U9043-0004	
U535 racks		
5 cm box (H), 28 boxes per rack	K0641-3000	
7.5 cm box (H), 20 boxes per rack	K0641-3001	
10 cm box (H) 12 boxes per rack	K0641-3002	

* Factory installed at no extra charge if purchased with the freezer at the same time.

Innova® U725 upright freezer



Description

The most popular upright freezer in our lineup is the U725, the perfect balance of power and efficiency. The U725 offers fast pull-down and recovery between door openings while consuming only 15.8 kWh/day.

Product features

General product features of the Innova family are listed on page 11. Specific features for Innova U725 include:

- Capacity: 725 L, up to 504 boxes or 50,400 samples
- Vacuum insulation integrated design with 725 liter internal capacity. Occupies approximately the same footprint as a traditional foamed 570 liter ULT-Freezer, but holds over 25 % more samples
- Bright, eye level, easy to read and reach front mounted LED control panel, provides temperature readout and fault codes
- Energy-efficient design reduces power consumption by 40-50 % and increases compressor life

Technical specifications

Description	Innova U725
Insulation type	Vacuum insulation paneling
Electrical	230 V, 50 Hz
Ambient to -85°C pull down	5.6 hrs
Power consumption	15.8 kWh/day 660 Watts
No. of inner doors	3
No. of cascading compressors	2
Capacity	725 L
Racks per freezer	18
5 cm box capacity	504
7.5 cm box capacity	360
10 cm box capacity	216
External dimensions (H x W x D)	195 x 102.5 x 86.7 cm
Internal dimensions (H x W x D)	136.5 x 86.5 x 61.5 cm
Net weight	315 kg

Ordering information

Description	Order no.	
U725 upright, 725 L internal capacity		
230 V, 50 Hz	U9440-0001	⚡
Back-up systems		
LN ₂ * 230 V, 50 Hz	U9044-0004	⚡
CO ₂ * 230 V, 50 Hz	U9043-0004	⚡
U725 racks		
5 cm box (H), 28 boxes per rack	K0641-3000	
7.5 cm box (H), 20 boxes per rack	K0641-3001	
10 cm box (H), 12 boxes per rack	K0641-3002	

* Factory installed at no extra charge if purchased with the freezer at the same time.

⚡ **Ordering information for other voltage options begins on page 144.**

Innova® C585 and Innova® C760 chest freezers



Description

New Brunswick chest freezers combine the high efficiency and superior capacity with ergonomic operation while maintaining their reputation of long-term durability and quality construction. The Innova line of chest freezers includes the efficient C585 and large-capacity C760.

Product features

General product features of the Innova family are listed on page 11. Specific features for Innova C585 and C760 include:

- The C760 has the largest capacity in its class: 760 L, up to 572 boxes or 57,200 samples
- The C585, with 585 liter capacity, offers storage for up to 46,000 samples. It consumes only 13.9 kWh/day, reducing your facility's carbon footprint
- Bright, easy to read and reach front mounted LED control panel provides temperature readout and fault codes
- 30 mm thick inner lids, constructed from molded insulation

Technical specifications

Description	Innova C585	Innova C760
Insulation type	Vacuum insulation paneling	
Electrical	230 V, 50 Hz	230 V, 50 Hz
Ambient to -85 °C pull down	4.5 hrs	5.8 hrs
Power consumption	13.6 kWh/day 565 Watts	16 kWh/day 665 Watts
No. of cascading compressors	2	2
Capacity	585 L	760 L
Racks per freezer	32	44
5 cm box capacity	416	572
7.5 cm box capacity	288	396
10 cm box capacity	192	264
External dimensions (H x W x D), cm	109.2 x 169 x 78.5	109.2 x 205 x 78.5
Internal dimensions (H x W x D), cm	78 x 120 x 62.5	78 x 156 x 62.5
Net weight	240 kg	285 kg

Ordering information

Description	Order no.	
C585 chest, 585 L internal capacity		
230 V, 50 Hz	U9400-0001	⚡
C760 chest, 760 L internal capacity		
230 V, 50 Hz	U9410-0001	⚡
Back-up systems		
LN ₂ * 230 V, 50 Hz	U9044-0004	⚡
CO ₂ * 230 V, 50 Hz	U9043-0004	⚡
Racks, C585 & C760		
5 cm box (H), 13 boxes per rack	K0641-1690	
7.5 cm box (H), 9 boxes per rack	K0641-1700	
10 cm box (H), 6 boxes per rack	K0641-1750	

* Factory installed at no extra charge if purchased with the freezer at the same time.

⚡ **Ordering information for other voltage options begins on page 144.**

Racks for Innova® and "G" Green freezers

U101 racks



For 5 cm tall boxes, 6 per freezer. Each rack holds 10 boxes. Order No. K0641-3003



For 7.5 cm tall boxes, 6 per freezer. Each rack holds 6 boxes. Order No. K0641-3004



For 10 cm tall boxes, 6 per freezer. Each rack holds 4 boxes. Order No. K0641-3005

U360, U535, U725 and U725-G upright freezer racks



For 5 cm tall boxes. Fits U360, U535 and U725 and holds 9/12/18 racks per freezer, respectively. Each rack holds 28 boxes. Order No. K0641-3000



For 7.5 cm tall boxes. Fits U360, U535 and U725 and holds 9/12/18 racks per freezer, respectively. Each rack holds 20 boxes. Order No. K0641-3001



For 10 cm tall boxes. Fits U360, U535 and U725 and holds 9/12/18 racks per freezer, respectively. Each rack holds 12 boxes. Order No. K0641-3002



C585 & C760 chest freezer racks

For 5 cm tall boxes.
Each rack holds 13 boxes.
Order No. K0641-1690

For 7.5 cm tall boxes.
Each rack holds 9 boxes.
Order No. K0641-1700

For 10 cm tall boxes.
Each rack holds 6 boxes.
Order No. K0641-1750

Boxes and additional accessories begin on page 28. For rack dimensions see page 8.

Premium freezer features

Description

Economical Premium Freezers are conventionally-insulated, providing a cost effective alternative, with many of the same features and quality as the Innova models. Four models are available: U410, U570, C340 and C660.

- Two large-capacity uprights – for easy access to samples, choose the U410 or U570, each with five insulated compartments and four adjustable-height shelves
- Two chests – if a chest style is preferred, choose C340 or C660, each with insulated sub-lids that provide added sample protection
- CO₂ and LN₂ back-up systems, racking and more are available

Product features

- Polyurethane foam insulation provides efficient insulation protection
- Quick pull down and recovery times with reliable heavy-duty compressors
- Inner doors are insulated minimizing cold air loss while accessing your samples in one of five compartments
- Five compartments, each accepts New Brunswick racks and other brands without shelf adjustment
- Adjustable-height shelves for storage flexibility. Each shelf is adjustable in 1.3 cm increments for odd size rack setup.
- Low temperature outer door seals allow gaskets to remain flexible at -86 °C temperatures
- Stainless steel interior is easily cleaned and eliminates the possibility of oxidation and cross contamination
- Significantly reduced noise levels achieved through advanced compressor housing with noise-reducing insulation enabling placement of the freezer directly in your work area
- Unique heated air vent with plunger to clear ice buildup and to relieve vacuum formation to gain immediate access to the freezer
- Password protection of alarm and temperature setpoints to prevent unauthorized users from altering settings
- SMART Plus™ diagnostics which allows system engineers to diagnose most issues over the phone, saving you time and money
- Each freezer slides effortlessly through a standard doorway simplifying installation



Premium U410, the smallest Premium upright offers 410 liters of storage space



Premium U570, (570 liters) combines both storage capacity and energy efficiency



Premium C340, the smallest chest freezer offers 340 liters of storage



Premium C660 is the largest Premium chest freezer, offering 660 liters of storage space

Premium U410 upright freezer



Description

The U410 is the smallest Premium upright freezer providing excellent performance. Pull down time from ambient to -85°C is 5.3 hours while consuming only 12.6 kWh/day. The U410 will provide years of maintenance-free, reliable operation with minimal energy consumption compared to competitive models.

Product features

General product features of the Premium family are listed on page 18. Specific features for Premium U410 include:

- Capacity: 410 L, up to 240 boxes or 24,000 samples
- Five compartments each with insulated inner doors. Accepts New Brunswick and other brand racks without shelf adjustment.
- Bright, eye level, easy to read and reach front-mounted LED control panel provides temperature readout and fault codes

Technical specifications

Description	Premium U410
Insulation type	Polyurethane foam
Electrical	230 V, 50 Hz
Ambient to -80°C pull down	5.3 hrs
Power consumption	12.6 kWh/day 525 Watts
No. of inner doors	5
No. of cascading compressors	2
Capacity	410 L
Racks per freezer	15
5 cm box capacity	240
7.5 cm box capacity	180
10 cm box capacity	120
External dimensions (H x W x D)	191.5 x 80 x 85.2 cm
Internal dimensions (H x W x D)	126.5 x 55 x 57.5 cm
Net weight	235 kg

Ordering information

Description	Order no.	
U410 upright, 410 L internal capacity		
230 V, 50 Hz	U9260-0001	⚡
Back-up systems		
LN ₂ * 230 V, 50 Hz	U9044-0008	⚡
CO ₂ * 230 V, 50 Hz	U9043-0008	⚡
U410 racks		
5 cm box (H), 16 boxes per rack	K0641-1900	
7.5 cm box (H), 12 boxes per rack	K0641-1890	
10 cm box (H), 8 boxes per rack	K0641-1880	

* Factory installed at no extra charge if purchased with the freezer at the same time.

⚡ **Ordering information for other voltage options begins on page 144.**

Premium U570 upright freezer



Description
The U570 is the largest upright freezer in the Premium line. The U570 will provide years of maintenance-free, reliable operation with minimal energy consumption compared to competitive models.

Product features

- General product features of the Premium family are listed on page 18. Specific features for Premium U570 include:**
- Capacity: 570 L, up to 400 boxes or 40,000 samples
 - Five compartments each with insulated inner doors. Accepts New Brunswick and other brand racks without shelf adjustment.
 - Bright, eye level, easy to read and reach front-mounted LED control panel provides temperature readout and fault codes
 - Energy-efficient design reduces power consumption and increases compressor life

Technical specifications

Description	Premium U570
Insulation type	Polyurethane foam
Electrical	230 V, 50 Hz
Ambient to -80 °C pull down	5.2 hrs
Power consumption	13.6 kWh/day 565 Watts
No. of inner doors	5
No. of cascading compressors	2
Capacity	570 L
Racks per freezer	25
5 cm box capacity	400
7.5 cm box capacity	300
10 cm box capacity	200
External dimensions (H x W x D)	192.5 x 102.5 x 85.2 cm
Internal dimensions (H x W x D)	126.5 x 76.5 x 57.5 cm
Net weight	265 kg

Ordering information

Description	Order no.	
U570 upright, 570 L internal capacity		
230 V, 50 Hz	U9270-0001	⚡
Back-up systems		
LN ₂ * 230 V, 50 Hz	U9044-0008	⚡
CO ₂ * 230 V, 50 Hz	U9043-0008	⚡
U570 racks		
5 cm box (H), 16 boxes per rack	K0641-1900	
7.5 cm box (H), 12 boxes per rack	K0641-1890	
10 cm box (H), 8 boxes per rack	K0641-1880	

* Factory installed at no extra charge if purchased with the freezer at the same time.

Premium C340 and Premium C660 chest freezers



Description

New Brunswick chest freezers combine the high efficiency and superior capacity with ergonomic operation while maintaining their reputation of long-term durability and quality construction. The Premium line of chest freezers offers a cost-saving alternative for those who need a reliable freezer but do not require the space-saving advantages of the Innova line.

Product features

General product features of the Premium family are listed on page 18. Specific features for Premium C340 and C660 include:

- C660 offers 660 L of internal capacity and holds up to 520 boxes or 52,000 samples
- C340 offers 340 L of internal capacity and holds up to 260 boxes or 26,000 samples
- Bright, easy to read and reach front-mounted LED control panel provides temperature readout and fault codes
- 10 mm thick insulated inner lids with stainless steel trim

Technical specifications

Description	Premium C340	Premium C660
Insulation type	Polyurethane foam	
Electrical	230 V, 50 Hz	230 V, 50 Hz
Ambient to -85 °C pull down	3.8 hrs	5.8 hrs
Power consumption	8.8 kWh/day 420 Watts	14.3 kWh/day 595 Watts
No. of cascading compressors	2	2
Capacity	340 L	660 L
Racks per freezer	20	40
5 cm box capacity	260	520
7.5 cm box capacity	180	360
10 cm box capacity	120	240
External dimensions (H x W x D)	107.5 x 134 x 84 cm	107.5 x 205 x 84 cm
Internal dimensions (H x W x D)	76 x 76 x 59 cm	76 x 147 x 59 cm
Net weight	205 kg	280 kg

Ordering information

Description	Order no.	
C340 chest, 340 L internal capacity		
230 V, 50 Hz	U9230-0001	⚡
C660 chest, 660 L internal capacity		
230 V, 50 Hz	U9250-0001	⚡
Back-up systems		
LN ₂ * 230 V, 50 Hz	U9044-0008	⚡
CO ₂ * 230 V, 50 Hz	U9043-0008	⚡
Racks, C340 & C660		
5 cm box (H), 13 boxes per rack	K0641-1690	
7.5 cm box H, 9 boxes per rack	K0641-1700	
10 cm box (H), 6 boxes per rack	K0641-1750	

* Factory installed at no extra charge if purchased with the freezer at the same time.

⚡ **Ordering information for other voltage options begins on page 144.**

Racks for Premium and HEF® freezers

U410 & U570 upright freezer racks



For 5 cm tall boxes.

Holds 15 or 25 racks/freezer, respectively. Each rack holds 16 boxes. Order No. K0641-1900



For 7.5 cm tall boxes.

Holds 15 or 25 racks/freezer, respectively. Each rack holds 12 boxes. Order No. K0641-1890



For 10 cm tall boxes.

Holds 15 or 25 racks/freezer, respectively. Each rack holds 8 boxes. Order No. K0641-1880



C340 & C660 chest freezer racks

For 5 cm tall boxes.

Fits C340 and C660 and holds 20 or 40 racks/freezer, respectively. Each rack holds 13 boxes. Order No. K0641-1690

For 7.5 cm tall boxes.

Fits C340 and C660 and holds 20 or 40 racks/freezer, respectively. Each rack holds 9 boxes. Order No. K0641-1700

For 10 cm tall boxes.

Fits C340 and C660 and holds 20 or 40 racks/freezer, respectively. Each rack holds 6 boxes. Order No. K0641-1750

Boxes and additional accessories begin on page 28. For rack dimensions see page 8.

Green and HEF® high-efficiency freezer features

Description

Energy-saving HEF® and Green Freezers are among the most energy-efficient ULT freezers in the industry. They reduce energy consumption by up to 35 % compared to our already energy-saving Innova and Premium models. If your goal is to safely store your samples while saving operating expense and being good to the environment, these are the models to choose.



HEF C660 is a large-capacity chest freezer, with 660 liters of storage space

Product features

- The HEF models are identical in all respects to the same-sized Premium freezer models, but use a 130 mm thick combination of super-insulating vacuum insulation panels and traditional foam, instead of urethane alone, to achieve exceptional energy efficiency
- HEF models are offered in three capacities, 410 and 570 liter uprights, as well as a 660 liter chest
- 50 Hz HEF models additionally use hydrocarbon-based refrigerants to further reduce energy consumption by another 10 %
- Green model U725-G is our largest high-efficiency upright freezer, at 725 liters
- U725-G is identical to the Innova® U725 in all respects, but uses hydrocarbon-based refrigerants to reduce energy consumption and greenhouse gases. Offered with air cooling or with water-cooling option for further energy savings
- For more product features see the Innova U725, or Premium U410, U570 or C660 pages



HEF U410 offers 410 liters of storage capacity in an upright design



HEF U570 is a mid-sized upright offering 570 liters of storage capacity



U725-G is our largest capacity upright, offering 725 liters of storage capacity

U725-G Green upright freezer



Description

For large-capacity needs, New Brunswick's U725-G "Green" freezer is one of the most environmentally friendly, energy efficient ULT freezers on the market. It is identical in all respects to Innova U725 except that in addition to eliminating all use of CFCs and HCFCs, this model is also free of hydrofluorocarbons (HFCs) to further reduce energy consumption and greenhouse gases.

Product features

- Capacity: 725 L, up to 504 boxes or 50,400 samples
- Uses safe and reliable hydrocarbon-based refrigerants in place of traditional refrigerants to reduce energy consumption by another 10 % over our already energy-efficient U725 freezer
- Air cooled and water cooled models offered. Water-cooling with energy-saving heat recapture provides maximum energy and environmental savings
- Space saving design uses vacuum insulation panel technology coupled with polyurethane foam in an 80 mm thick wall to maximize storage capacity. 725 liter system occupies approximately the same footprint as a 570 liter ULT freezer
- Identical construction, quality and features as the standard model Innova U725

Technical specifications

Description	U725-G Green
Insulation type	Vacuum insulation panels and polyurethane foam
Electrical	230 V, 50 Hz
Ambient to -80 °C pull down	5.4 hrs
Power consumption	15.2 kWh/day 635 Watts
No. of inner doors	3
No. of cascading compressors	2
Capacity	725 L
Racks per freezer	18
5 cm box capacity	504
7.5 cm box capacity	360
10 cm box capacity	216
External dimensions (H x W x D)	195 x 102.5 x 86.7 cm
Internal dimensions (H x W x D)	136.5 x 86.5 x 61.5 cm
Net weight	315 kg

Ordering information

Description	Order no.	
U725-G Green upright, 725 L internal capacity		
230 V, 50 Hz, air cooled	U9440-0005	⚡
230 V, 50 Hz, water cooled	U9440-0004	⚡
Back-up systems		
LN ₂ * 230 V, 50 Hz	U9044-0004	⚡
CO ₂ * 230 V, 50 Hz	U9043-0004	⚡
U725-G Green racks		
5 cm box (H), 28 boxes per rack	K0641-3000	
7.5 cm box (H), 20 boxes per rack	K0641-3001	
10 cm box (H), 12 boxes per rack	K0641-3002	

* Factory installed at no extra charge if purchased with the freezer at the same time.

HEF® U410 high-efficiency upright freezer



Description

New Brunswick's HEF freezers are among the most environmentally friendly, energy efficient ULT freezers on the market. The most compact model in the HEF line, upright HEF U410 is identical to the Premium U410, except that it further reduces energy consumption by another 33 %.

Product features

- Capacity: 410 L, up to 240 boxes or 24,000 samples
- Achieves energy savings through use of a 130 mm-thick layer of insulation, composed of vacuum insulation panels and polyurethane foam
- 50 Hz models additionally use reliable and safe hydrocarbon-based refrigerants for 10 % further energy savings
- Identical construction, quality and features as the standard model Premium U410, including five compartments, four adjustable shelves, heated-air vent with ice-clearing plunger, advanced security and more

Technical specifications

Description	HEF U410
Insulation type	Vacuum insulation panels and polyurethane foam
Electrical	230 V, 50 Hz
Ambient to -85 °C pull down	5.6 hrs
Power consumption	8.4 kWh/day 350 Watts
No. of inner doors	5
No. of cascading compressors	2
Capacity	410 L
Racks per freezer	15
5 cm box capacity	240
7.5 cm box capacity	180
10 cm box capacity	120
External dimensions (H x W x D)	191.5 x 80 x 85.2 cm
Internal dimensions (H x W x D)	126.5 x 55 x 57.5 cm
Net weight	262 kg

Ordering information

Description	Order no.	
HEF U410 upright, 410 L internal capacity		
230 V, 50 Hz	U9260-0008	⚡
Back-up systems		
LN ₂ * 230 V, 50 Hz	U9044-0008	⚡
CO ₂ * 230 V, 50 Hz	U9043-0008	⚡
HEF U410 racks		
5 cm box (H), 16 boxes per rack	K0641-1900	
7.5 cm box (H), 12 boxes per rack	K0641-1890	
10 cm box (H), 8 boxes per rack	K0641-1880	

* Factory installed at no extra charge if purchased with the freezer at the same time.

⚡ **Ordering information for other voltage options begins on page 144.**

HEF® U570 high-efficiency upright freezer

**Description**

Like all New Brunswick HEF high efficiency freezers, the HEF U570 is one of the most environmentally friendly, energy efficient -86°C freezers on the market. The HEF U570 is identical to New Brunswick's Premium U570 upright freezer, except that it further reduces energy consumption by another 35,6 %.

Product features

- Capacity: 570 L, up to 400 boxes or 40,000 samples
- Achieves energy savings through use of a 130 mm-thick layer of insulation, composed of vacuum insulation panels and polyurethane foam
- 50 Hz models additionally use reliable and safe hydrocarbon-based refrigerants for 10 % further energy savings
- Identical construction, quality and features as the Premium U570, including five compartments, four adjustable shelves, heated-air vent with ice-clearing plunger, advanced security and more

Technical specifications

Description	HEF U570
Insulation type	Vacuum insulation panels and polyurethane foam
Electrical	230 V, 50 Hz
Ambient to -80 °C pull down	5.5 hrs
Power consumption	8.9 kWh/day 364 Watts
No. of inner doors	5
No. of cascading compressors	2
Capacity	570 L
Racks per freezer	25
5 cm box capacity	400
7.5 cm box capacity	300
10 cm box capacity	200
External dimensions (H x W x D)	192.5 x 102.5 x 85.2 cm
Internal dimensions (H x W x D)	126.5 x 76.5 x 57.5 cm
Net weight	296 kg

Ordering information

Description	Order no.	
HEF U570 upright, 570 L internal capacity		
230 V, 50 Hz	U9270-0008	⚡
Back-up systems		
LN ₂ * 230 V, 50 Hz	U9044-0008	⚡
CO ₂ * 230 V, 50 Hz	U9043-0008	⚡
HEF U570 racks		
5 cm box (H), 16 boxes per rack	K0641-1900	
7.5 cm box (H), 12 boxes per rack	K0641-1890	
10 cm box (H), 8 boxes per rack	K0641-1880	

* Factory installed at no extra charge if purchased with the freezer at the same time.

HEF® C660 high-efficiency chest freezer

**Description**

The large-capacity HEF C660 is one of the most energy efficient, eco-friendly chest freezers available on the market today. It is identical to New Brunswick's Premium C660, except that it further reduces energy consumption by another 25 %.

Product features

- Capacity: 660 L, up to 520 boxes or 52,000 samples
- Achieves energy savings through use of a 130 mm-thick layer of insulation, composed of vacuum insulation panels and polyurethane foam
- 50 Hz models additionally use reliable and safe hydrocarbon-based refrigerants for 10 % further energy savings
- Identical construction, quality and features as the standard model Premium 660, including three insulated sub lids made of 10 mm thick panels with stainless steel edge, large bright LED, battery backup, heated-air vent with ice-clearing plunger, advanced security and more

Technical specifications

Description	HEF C660
Insulation type	Vacuum insulation panels and polyurethane foam
Electrical	230 V, 50 Hz
Ambient to -85 °C pull down	5 hrs
Power consumption	11.4 kWh/day 475 Watts
No. of cascading compressors	2
Capacity	660 L
Racks per freezer	40
5 cm box capacity	520
7.5 cm box capacity	360
10 cm box capacity	240
External dimensions (H x W x D)	107.5 x 205 x 84 cm
Internal dimensions (H x W x D)	76 x 147 x 59 cm
Net weight	304 kg

Ordering information

Description	Order no.	
HEF C660 chest, 660 L internal capacity		
230 V, 50 Hz	U9250-0008	⚡
Back-up systems		
LN ₂ * 230 V, 50 Hz	U9044-0008	⚡
CO ₂ * 230 V, 50 Hz	U9043-0008	⚡
HEF C660 racks		
5 cm box (H), 13 boxes per rack	K0641-1690	
7.5 cm box (H), 9 boxes per rack	K0641-1700	
10 cm box (H), 6 boxes per rack	K0641-1750	

* Factory installed at no extra charge if purchased with the freezer at the same time.

⚡ **Ordering information for other voltage options begins on page 144.**

Freezer accessories



New Brunswick cardboard boxes

- White cardboard box with water resistant coating, designed to withstand ultra-low temperatures
- Available in 50 mm, 70 mm and 100 mm tall boxes
- Compatible with box dividers 7 x 7 to 10 x 10 (dividers sold separately)

Freezer box dividers

- Available in 7 x 7, 8 x 8, 9 x 9 and 10 x 10 configurations
- Compatible with Innova cardboard boxes (boxes sold separately)

Ordering information

Description	Order no.	
Accessories		
5 cm tall white cardboard storage boxes	B50-SQ	
7.5 cm tall white cardboard storage boxes	B75-SQ	
10 cm tall white cardboard storage boxes	B95-SQ	
Divider 7 x 7, 17.4 mm max. tube diameter, holds 49 tubes	D49	
Divider 8 x 8, 15 mm max. tube diameter, holds 64 tubes	D64	
Divider 9 x 9, 13 mm max. tube diameter, holds 81 tubes	D81	
Divider 10 x 10, 11.8 mm max. tube diameter, holds 100 tubes	D100	

Freezer accessories



Freezer back-up systems

- Equipped with a battery back-up to temporarily protect the contents of your freezer in case of power failure.
- Available in either liquid CO₂ and LN₂. Liquid CO₂ can maintain temperature down to -86 °C
- Both systems can be factory installed with your freezer order at no additional charge or retrofitted on location

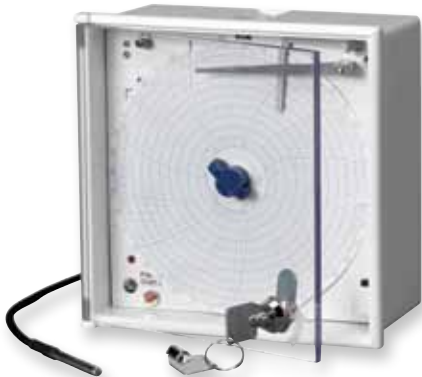


Chart recorder

- Includes 7-day chart recorder, thermocouple, keys, 100 x chart recorder paper and chart recorder pens
- Can be factory installed with your freezer order at no additional charge or retrofitted on location

Ordering information

Description	Order no.	
Accessories		
Innova and Green CO ₂ back-up, 230 V, 50 Hz	U9043-0004	⚡
Premium and HEF CO ₂ back-up, 230 V, 50 Hz	U9043-0008	⚡
Innova and Green LN ₂ back-up, 230 V, 50 Hz	U9044-0004	⚡
Premium and HEF LN ₂ back-up, 230 V, 50 Hz	U9044-0008	⚡
Chart recorder with reverse scale charts, temperature sensor	K0440-0355	
Chart recorder paper, pack of 100 charts, for K0440-0355	K0540-0025	
Chart recorder pens, 3, for K0440-0355	K0660-0051	
U101 stacking kit	P0625-0020	
Padlock adapter kit upright models	P0625-1170	
BioCommand® SFI Automated Data Logging Software, see page 30	M1291-1002	

⚡ Ordering information for other voltage options begins on page 144.



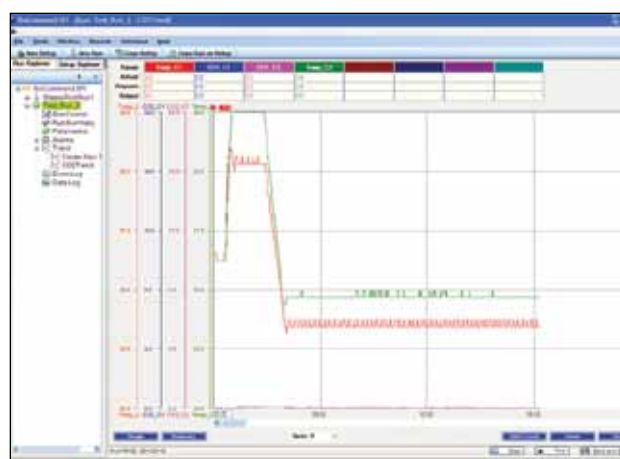
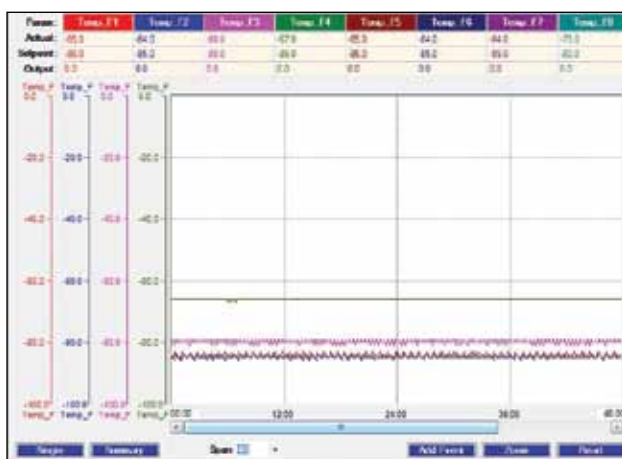
Graphical representation of the output

Description

BioCommand SFI software: The BioCommand SFI software package is designed specifically for standard laboratory equipment including shakers, CO₂ incubators and ULT-Freezers¹. The software package allows you to track key operational information such as time, temperature, shaking speed, CO₂ concentrations and humidity.

Product features

- Track the operational parameters of your choice with the option to design and save templates
- Monitor multiple units from the same PC
- Trend and archive critical data including temperature, agitation speed and gas concentration for up to 32 units simultaneously
- Provides indications of alarm conditions identified by the product



Ordering information

Description	Order no.	
BioCommand SFI packages¹		
ULT-Freezer package	M1291-1002	
Shaker package	M1291-1000	
CO ₂ incubator package	M1291-1001	
To connect additional units²		
ULT-Freezer cable set, 15 m, includes RS-485 board	M1291-5001	
Shaker cable, 7.6 m	M1291-8001	
CO ₂ incubator cable, 4.5 m	P0620-7012	
4-port RS-232/485 to USB converter	P0460-7751	
8-port RS-232/485 to USB converter	P0460-7750	

2 When connecting multiple shakers, CO₂ incubators or freezers, in addition to a single software package, one additional cable is required for each additional system you monitor/log. Shakers and CO₂ incubators additionally require a 4- or 8-port converter.

Freezer spare parts

Ordering information*1

Description	Order no.	
Accessories and replacement parts		
Battery 6 V, 2.8 Ah, all models	K0480-0170	
Air filter, U101	K0200-0506	
Air filter, U360	P0625-1110	
Air filter, upright models	K0200-0511	
Air filter, chest models	K0200-0516	
Air filter grille, U101	K0200-0505	
Air filter grille, U360	P0625-1100	
Air filter grille, upright models	K0200-0510	
Air filter grille, chest models	K0200-0515	
Inner lid, C585	K0160-0777	
Inner lid, C760	K0160-0776	
Inner lid, C340	K0280-1041	
Inner lid, C660	K0280-1043	
Inner shelf, U101	P0625-0180	
Extra shelf, U360. Includes four mounting clips.	P0625-1180	
Extra shelf, U535. Includes four mounting clips.	K0280-1034	
Extra shelf, U725. Includes four mounting clips.	K0280-1036	
Extra shelf, U410. Includes four mounting clips.	K0280-1031	
Extra shelf, U570. Includes four mounting clips.	K0280-1030	
Shelf clips only, stainless steel, pack of four, upright models	K0280-0550	
Alarm connector plug, all models	K0380-0451	

*1 For a complete parts list, refer to your user manual.

New Brunswick shakers – dependable and reliable

Description

New Brunswick Scientific laboratory shakers are known throughout the world for dependable operation and innovative design. New Brunswick manufactures the widest selection of shakers in the industry, with more than 40 models available to suit your exact needs. Select from a broad range of open-air, incubated, or incubated/refrigerated models.

Our top-of-the-line **Innova**® lab shakers feature New Brunswick's triple-eccentric drive for uniform motion and superb reliability under the most adverse conditions. Innova temperature-controlled models provide the convenience of programmable controls to automate ramping temperature and speed up and down, and cycling optional photosynthetic and UV lighting on and off at pre-set intervals. Budget-saving **Excella**® shakers feature microprocessor-controls for accurate control, and heavy-duty counterbalanced drives for dependable performance.

Innovative designs and unparalleled fabrication provide you with day-in and day-out worry-free operation, often for decades of continuous use.

Product features

- Advanced microprocessor controls ensure reproducible results and operator convenience
- “Set it and forget it” programming in Innova incubated and incubated/refrigerated models enable you to store and recall multiple parameter multi-step programs for convenient, automated operation
- Numerous safety features are built in to protect you, your cultures and your shaker
- We offer the most comprehensive warranty in the industry
- We offer the largest selection of shakers in the industry – nearly 20 models in our Innova line alone, to meet virtually any culturing or molecular biology application

For incubator shakers, see pages 36–49.

For open air shakers, see pages 54–63.

For water bath shakers, see pages 64–67.



What makes Innova® shakers so reliable?

Description

Dependable operation is due in large part to the New Brunswick triple-eccentric counterbalanced drive.

Our Excella® shaker line provides good performance and value for less demanding applications.

We also offer the I26 stackable incubator shaker with triple-eccentric drive, high temperature water bath shakers, as well as a wide range of platforms and accessories.

Product features

- Components are fabricated to exacting specifications. Drive shafts, for example, are machined to tolerances of 0.0051 mm, ensuring stable vibration-free operation even when operated at speeds up to 500 rpm
- Ultimate precision is ensured as each and every triple-eccentric mechanism is checked and measured using a Computer Aided Measurement (CAM) System. They are NOT batch tested.
- With the highest quality materials, superior design and precision fabrication, we guarantee our shakers will provide worry-free operation for many years to come



New Brunswick's often-imitated but never duplicated heavy-duty, counterbalanced triple-eccentric drive ensures uniform motion is imparted to every flask, regardless of position on the platform. Heavy-duty construction allows us to guarantee that our shakers will perform to our specifications, even when fully loaded and operating at top speed.

Selecting the correct platform for your New Brunswick shaker



Universal platform shown with accessory clamps, test tube racks and sticky tape.



Dedicated platforms – when a single-size flask will be used, these platforms maximize capacity, and come with clamps already mounted.

Platforms for New Brunswick shakers must be purchased separately. A wide range of interchangeable accessory platforms are offered to accommodate all your glassware.

Universal platforms – have multiple holes enabling you to mix different-sized clamps, as well as mount an assortment of microtiter plates and test tube racks onto a single platform, for maximum versatility. Clamps and accessories for Universal Platforms are sold separately – see pages 50 & 68.

Dedicated platforms – when just one size flask will be used on the shaker, (i.e., 250 mL flasks), dedicated platforms come with flask clamps already mounted. Dedicated platforms generally will hold a greater number of flasks than the universal platform, but do not offer the versatility.

New Brunswick shaker selection guide – incubated/refrigerated models

Enclosed incubator shakers		Innova®							
Balanced drive mechanism	Triple-eccentric with permanently lubricated ball bearings								
Motor type	Solid state, DC brushless motor								
Audible and visual alarms	Yes								
cETLus and CE marked	Yes								
Timer	0.1 – 99.9 hrs								
Model	40	40R	42	42R	43	43R	44	44R	
(Images not to scale)					3 units shown				
Page	36		38		40		42		
Accessories page	50		50		50		50		
Platform size (W x D), cm	46 x 46		46 x 46		76 x 46		76 x 46		
Benchtop (B), Under bench (U), Console (C) or Floor stackable (S)	B		B, U, S (x2)		C		C, S (x3)		
Orbit diameter, cm	1.9 or 2.5		1.9 or 2.5		2.5 or 5.1		2.5 or 5.1		
RPM range	25 to 500		25 to 400		25 to 500		25 to 400		
Temperature range (in °C) [A = Ambient]	A +5 to 80	A –15 to 80	A +5 to 80	A –20 to 80	A +5 to 80	A –20 to 80	A +5 to 80	A –20 to 80	
CO ₂ control									
Refrigerated		Yes		Yes		Yes		Yes	
Active humidification									
Multi-step programming	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Space saving glide up doors							Yes	Yes	
Slide out platform							Yes	Yes	
In chamber power receptacle			Yes	Yes					
Internal convenience light			Yes	Yes			Yes	Yes	
Com port	RS-232	RS-232	RS-232	RS-232	RS-232	RS-232	RS-232	RS-232	
Available options									
O ₂ control									
Humidity monitor			Yes	Yes	Yes	Yes	Yes	Yes	
Photosynthetic lighting				Yes		Yes		Yes	
Gassing manifold			Yes	Yes	Yes	Yes	Yes	Yes	
UV germicidal lamp				Yes		Yes		Yes	
Dedicated platform									
Maximum capacity									
50 mL Erlenmeyer flasks	64		64		108		—		
125 mL Erlenmeyer flasks	34		34		60		60		
250 mL Erlenmeyer flasks	25		25		40		40		
500 mL Erlenmeyer flasks	16		16		24		24		
1 L Erlenmeyer flasks	9		9		15		15		
2 L Erlenmeyer flasks	5		5		12		12		
2.8 L Fernbach flasks	4		4		6		6		
4 L Erlenmeyer flasks	—		4		6		6		
6 L Erlenmeyer flasks	—		—		4		—		
Universal platform									
Maximum capacity									
10 mL Erlenmeyer flasks	109		109		183		187		
25 mL Erlenmeyer flasks	64		64		92		93		
50 mL Erlenmeyer flasks	45		45		92		91		
125 mL Erlenmeyer flasks	21		21		39		39		
250 mL Erlenmeyer flasks	18		18		30		30		
500 mL Erlenmeyer flasks	14		14		18		24		
1 L Erlenmeyer flasks	8		8		12		14		
2 L Erlenmeyer flasks	5		5		8		8		
2.8 L Fernbach flasks	4		4		6		6		
4 L Erlenmeyer flasks	—		4		6		6		
5 L Erlenmeyer flasks	—		4		6 ¹		6 ¹		
6 L Erlenmeyer flasks	—		2 ¹		4 ¹		—		
Dimensions (W x D x H), cm	55.9 x 76.2 x 61		62 x 75.4 x 82		115.6 x 81.3 x 103.1		135 x 87 x 73.5		
Weight, kg	60.3	79.4	98.5	121	202	216	238	257	

¹ Using Sticky Tape – less with clamps. Max flask size is 4 L when using photosynthetic lighting option.

New Brunswick shaker selection guide – incubated/refrigerated models

Excella®					
Heavy-duty with permanently lubricated ball bearings					
Solid state, DC brushless motor					
Yes					
Yes					
0.1 - 99.9 hrs					
I26	I26R	E24	E24R	E25	E25R
	2 shown on optional base				
44		46		48	
50		50		50	
76 x 46		46 x 46		76 x 46	
S (x3)		B		C	
2.5		1.9		2.5	
25 to 400		50 to 400		50 to 400	
A +5 to 60	A -15 to 60	A +7 to 60	A -15 to 60	A +7 to 60	A -15 to 60
	Yes		Yes		Yes
Yes	Yes				
RS-232	RS-232	RS-232	RS-232	RS-232	RS-232
Available options					
Dedicated platform					
—		64		108	
60		34		60	
40		25		40	
24		16		24	
15		9		15	
12		5		12	
6		4		6	
—		—		6	
—		—		4	
Universal platform					
187		109		—	
93		64		—	
93		45		91	
39		21		39	
30		18		30	
24		14		18	
12		8		12	
8		5		8	
6		4		6	
—		—		6	
—		—		—	
—		—		4	
128.3 x 77 x 70		56 x 76.2 x 61		127 x 77 x 105.9	
168	186	60	80	167	196

Innova® 40 benchtop incubator shaker and 40R with added refrigeration



Description

Innova 40 incubator shakers provide very broad temperature capabilities for culturing a wide variety of organisms in flasks up to 3 L. Refrigeration module is built into the Innova 40R, or can be easily added to Model 40, at any time.

Product features

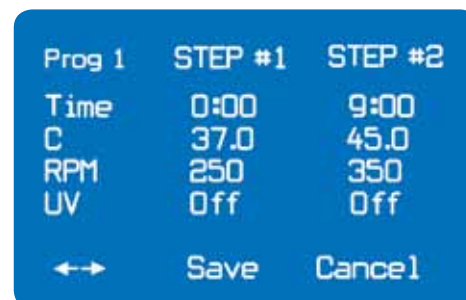
- **Compact benchtop model** – fits on the bench and holds flasks up to 3 L
- **Programmable Innova controls** – automatically changes temperature and speed at customer-programmed, timed intervals
- **See-through lid** – provides clear visibility to view cultures. Lifts easily to access all samples
- **Innova 40 can be upgraded with refrigeration**

Technical specifications

Description	Innova 40	Innova 40R
Platform size (W x D)	46 x 46 cm	
Temperature range	Ambient + 5 °C to 80 °C	15 °C below ambient to 50 °C (min. 4 °C)
Speed (rpm)	25 to 500	
Orbit	1.9 or 2.5 cm	
Temperature uniformity	+/- 0.25 °C at 37 °C	
Innova control programmer		
Timer	0.1 to 99.9 hours + continuous operation	
Memory	Non volatile with automatic power failure restart	
Available program modes	● Constant speed and temperature ● Timed shaking ● Programmable multi-steps ● RS-232 control	
Multi-step programming		
Stored programs	4	
Steps per program	15	
Dimensions (W x D x H)	55.9 x 76.2 x 61 cm (101.6 cm depth with lid open)	
Net weight	60.3 kg	79.4 kg



Easy to view LCD shows all important parameter settings at a glance.



Multi-step programming and program storage provide reproducible runs, time after time.

Innova® 40 benchtop incubator shaker and 40R with added refrigeration

Ordering information

Model	Power supply	Order no. 1.9 cm orbit	Order no. 2.5 cm orbit	
40 Incubated	230 V, 50 Hz	M1299-0082	M1299-0092	
40R Incubated/ Refrigerated	230 V, 50 Hz	M1299-0086	M1299-0096	
Factory installed options				
Refrigerated module to upgrade Innova 40 to Innova 40R			M1299-0061	
Remote alarm			M1320-8029	

Shaker does not include platforms which must be ordered separately.

Ordering information

Description	Clamps	Order no.	
Innova 40 and 40R interchangeable platforms , 46 x 46 cm phenolic resin unless otherwise stated. For a complete list of flask clamps and platform attachments, see pages 50–51.			
Universal platform, aluminum	—	M1250-9902	
Drip pan for universal platform M1250-9902	—	M1250-9906	
Utility carrier holds glassware between rubber-cushioned cross bars	—	M1194-9909	
Rod kit for utility carrier (one additional rod)	—	M1194-9923	
Utility tray with non-skid surface	—	M1194-9910	
50 mL Erlenmeyer flask dedicated platform, phenolic resin	64	M1194-9903	
125 mL Erlenmeyer flask dedicated platform, phenolic resin	34	M1194-9904	
250 mL Erlenmeyer flask dedicated platform, phenolic resin	25	M1194-9905	
500 mL Erlenmeyer flask dedicated platform	16	M1194-9906	
1 L Erlenmeyer flask dedicated platform	9	M1194-9907	
2 L Erlenmeyer flask dedicated platform	5	M1194-9908	
2.8 L Fernbach flask dedicated platform	4	M1233-9932	
Sticky pad platform, (pads sold separately)	—	M1250-9903	
Quick-change platform kit, enables platform attachment without tools	—	M1192-9901	

 **Ordering information for other voltage options begins on page 144.**

Innova® 42 stackable, on- or under-bench incubator shaker and 42R with added refrigeration



Shown stacked two units high.
Stationary shelf and internal power receptacle are standard.

Technical specifications

Description	Innova 42	Innova 42R
Platform size (W x D)	46 x 46 cm	
Temperature range	Ambient +5 °C to 80 °C	20 °C below ambient to 80 °C
Speed (rpm)	25 to 400	
Orbit	1.9 or 2.5 cm	
Temperature uniformity	+/-0.25 °C at 37 °C	
Internal electric receptacle		
Innova control programmer		
Timer	0.1 to 99.9 hours + continuous operation	
Memory	Non volatile with automatic power failure restart	
Available program modes	● Constant speed and temperature ● Timed shaking ● Programmable multi-steps ● RS-232 control	
Multi-step programming		
Stored programs	4	
Steps per program	15	
Dimensions (W x D x H)	62 x 75.4 x 82 cm (131 cm depth with door open)	
Net weight	98.5 kg	121 kg

Baffled flasks will reduce maximum speed. When stacked, maximum speed is 400 rpm with 250/500 mL flasks; maximum 300 rpm or lower with larger flasks.

Description

The Innova 42 and refrigerated Innova 42R provide labs with the most flexible options on the market today. These units are compact enough to fit on top of a lab bench, underneath the counter, or can be stacked two high on the floor for maximum capacity with minimal floor space.

Product features

- **Our most versatile model** – fits on the bench, under the counter, on the floor or can easily be double stacked to provide large capacity in minimal space.
- **Programmable Innova controls** – automatically change temperature, speed and optional photosynthetic and UV germicidal lights at timed programmed intervals
- **Internal moisture-proof power receptacle** – allows for the use of powered equipment inside the incubator
- **Large viewing window and internal light** – for easy viewing of samples without the need to open the door
- **Accommodates flasks up to 6 L**
- **Multi-function reservoir with built in drain** – humidifies chamber to reduce sample evaporation and protects unit from spills
- **Internal shelf** provides a stable surface for incubating samples not requiring shaking. Fully adjustable height provides maximum flexibility in accommodating samples.



New Brunswick's unique culture drawer option reduces sample desiccation while the samples are incubating.

Innova® 42 stackable, on- or under-bench incubator shaker and 42R with added refrigeration

Ordering information

Model	Power supply	Order no. 1.9 cm orbit	Order no. 2.5 cm orbit	
42 Incubated	230 V, 50 Hz	M1335-0002	M1335-0012	
42R Incubated/ Refrigerated	230 V, 50 Hz	M1335-0006	M1335-0016	
Factory installed options				
Photosynthetic light bank, programmable (Innova 42R only)			M1335-0300	
UV germicidal light, programmable (Innova 42R only)			M1335-0400	
12-port gassing manifold			M1335-0600	
Humidity monitor			M1335-0500	
Remote alarm			M1320-8029	

Shaker does not include platforms which must be ordered separately.

Ordering information

Description	Clamps	Order no.	
Innova 42 and 42R interchangeable platforms , 46 x 46 cm phenolic resin unless otherwise stated.			
For a complete list of flask clamps and platform attachments, see pages 50–51.			
Universal platform, aluminum	—	M1250-9902	
Drip pan for universal platform M1250-9902	—	M1250-9906	
Utility carrier holds glassware between rubber-cushioned cross bars	—	M1194-9909	
Rod kit for utility carrier (one additional rod)	—	M1194-9923	
Utility tray with non-skid surface	—	M1194-9910	
50 mL Erlenmeyer flask dedicated platform, phenolic resin	64	M1194-9903	
125 mL Erlenmeyer flask dedicated platform, phenolic resin	34	M1194-9904	
250 mL Erlenmeyer flask dedicated platform, phenolic resin	25	M1194-9905	
500 mL Erlenmeyer flask dedicated platform	16	M1194-9906	
1 L Erlenmeyer flask dedicated platform	9	M1194-9907	
2 L Erlenmeyer flask dedicated platform	5	M1194-9908	
2.8 L Fernbach flask dedicated platform	4	M1233-9932	
4 L Erlenmeyer flask dedicated platform	4	M1233-9930	
Sticky pad platform, (Sticky pads sold separately)	—	M1250-9903	
Quick-change platform kit, enables platform attachment without tools	—	M1192-9901	
Culture drawer, prevents plates from drying	—	M1335-0501	
Stacking kit, required when stacking 42/42R units (see also M1335-0810 below)		M1335-0800	
Stacking kit, to stack Innova 4200/4230 units on top of Innova 42/42R shakers		M1335-0810	
Additional perforated shelf and brackets		M1335-0080	

 **Ordering information for other voltage options begins on page 144.**

Innova® 43 programmable console incubator shaker and 43R with added refrigeration



Description

The large capacity incubated Innova 43 and incubated/refrigerated Innova 43R shakers accommodate numerous culture flasks, up to 6 L. Flask loading and unloading is easily accomplished with the foot pedal release and easy open lid design. Standard swivel casters provide easy mobility.

Product features

- **Console style incubated and incubated/refrigerated shaker with triple-eccentric drive** – provides large capacity shaking for flasks up to 6 L
- **Programmable Innova controls** – automatically changes temperature, speed and optional photosynthetic and UV germicidal lights at customer-programmed, timed intervals
- **Top mounted controls and display** – for easy, ergonomic viewing and setting
- **Foot pedal release with easy opening lid** – provides hands-free operation
- **Lighted interior** – for easy sample viewing through thermal glass
- **RS-232 port** for data logging and control
- **Multi-function reservoir with built in drain** – humidifies chamber to reduce sample evaporation and protects unit from spills

Technical specifications

Description	Innova 43	Innova 43R
Platform size (W x D)	76 x 46 cm	
Temperature range	+5 °C above ambient to 80 °C	17 °C below ambient to 80 °C
Temperature uniformity	+/-0.25 °C at 37 °C	
Speed (rpm)		
2.5 cm orbit	25 to 500	
5.1 cm orbit	25 to 300	
Innova control programmer		
Timer	0.1 to 99.9 hours + continuous operation	
Memory	Non volatile with automatic power failure restart	
Available program modes	● Constant speed and temperature ● Timed shaking ● Programmable multi-steps ● RS-232 control	
Multi-step programming:		
Stored programs	4	
Steps per program	15	
Dimensions (W x D x H)	115.6 x 81.3 x 103.1 cm (165.1 cm depth with door open)	
Net weight	202 kg	216 kg



Foot pedal activated lid for hands-free opening.



Top-mounted controls for easy viewing and setting.

Innova® 43 console incubator shaker and 43R with added refrigeration

Ordering information

Model	Power supply	Order no. 2.5 cm orbit	Order no. 5.1 cm orbit	
43 Incubated	230 V, 50 Hz	M1320-0002	M1320-0012	
43R Incubated/Refrigerated	230 V, 50 Hz	M1320-0006	M1320-0016	
Factory installed options				
Photosynthetic light bank (Innova 43R only)			M1320-0300	
UV germicidal light, in the airflow path outside the chamber reduces the bio-burden of circulated air (Innova 43R only)			M1320-0400	
12-port gassing manifold, permits direct gassing into flasks			M1320-0500	
Humidity monitor			M1320-0600	
Remote alarm			M1320-8029	

Shaker does not include platforms which must be ordered separately.

Ordering information

Description	Clamps	Order no.	
Innova 43 and 43R interchangeable platforms, 76 x 46 cm aluminum.			
For a complete list of flask clamps and platform attachments, see pages 50–51.			
Universal platform	—	M1250-9920	
Utility tray with non-skid surface	—	AG-00	
50 mL Erlenmeyer flask dedicated platform	108	M1191-9908	
125 mL Erlenmeyer flask dedicated platform	60	M1191-9909	
250 mL Erlenmeyer flask dedicated platform	40	M1191-9910	
500 mL Erlenmeyer flask dedicated platform	24	M1191-9911	
1 L Erlenmeyer flask dedicated platform	15	AG-1	
2 L Erlenmeyer flask dedicated platform	12	AG-2	
2.8 L Fernbach flask dedicated platform	6	AG-28	
4 L Erlenmeyer flask dedicated platform	6	AG-4	
6 L Erlenmeyer flask dedicated platform, (cannot be used with light bank)	4	AG-6	
Sticky platform, (sticky pads sold separately)	—	M1250-9904	
Utility basket for incubating/refrigerating stationary glassware	—	M1320-0700	

 **Ordering information for other voltage options begins on page 144.**

Innova® 44 stackable, programmable incubator shaker and 44R with added refrigeration



3 shakers shown with standard slide-out mechanism

Technical specifications

Description	Innova 44	Innova 44R
Platform size (W x D)	76 x 46 cm	
Temperature range	+5°C above ambient to 80°C	20°C below ambient to 80°C
Temperature uniformity	+/-0.25 °C at 37 °C	
Speed (rpm)		
2.5 cm orbit	25 to 400	
5.1 cm orbit or 2 stacked units	25 to 300	
5.1 cm orbit or 3 stacked units	25 to 250	
Innova control programmer		
Timer	0.1 to 99.9 hours + continuous operation	
Memory	Non volatile with automatic power failure restart	
Available program modes	● Constant speed and temperature ● Timed shaking ● Programmable multi-steps ● RS-232 control	
Multi-step programming:		
Stored programs	4	
Steps per program	15	
Dimensions (W x D x H)	135 x 87 x 73.5 cm (open door requires additional 53 cm height)	
Net weight	237 kg	257 kg

Description

The flagship of the Innova incubated and incubated/refrigerated shaker line provides superior shaking and control with its triple-eccentric drive mechanism for worry-free, 24/7 shaking. Large LCD panel displays all pertinent parameters. The Innova 44/44R system provides space-saving design with stacking capabilities, a glide-up door and an ergonomic slide-out platform.

Product features

- **Innova programmable controller** – provides “set it and forget it” convenience. Automatically changes temperature, speed, optional photosynthetic and UV germicidal lights at customer-programmed, timed intervals.
- **Slide-out platform mechanism** – provides easy and effortless access to flasks located in the front and back of the shaker/incubator
- **Glide up front door** – requires very little space when opened
- **Stackable** – up to three units high, both saving space and increasing capacity
- **Double pane thermal glass** – provides excellent insulation coupled with easy viewing
- **Interior chamber light**
- **Holds flasks up to 5 L**
- **Multi-function reservoir with built in drain** – humidifies chamber to reduce sample evaporation and protects unit from spills



Universal platform shown with accessory clamps, test tube racks and sticky tape.



Dedicated platforms – when a single-size flask will be used, these platforms maximize capacity, and come with clamps already mounted.

Innova® 44 stackable, programmable incubator shaker and 44R with added refrigeration

Ordering information

Model	Power supply	Order no.	
		2.5 cm orbit	5.1 cm orbit
44 Incubated	230 V, 50 Hz	M1282-0002	M1282-0012
44R Incubated/Refrigerated	230 V, 50 Hz	M1282-0006	M1282-0016
Factory installed options			
Photosynthetic light bank (for 44R Model only)		M1282-9922	
12-port gassing manifold		M1282-0291	
Humidity monitor		M1282-5011	
UV germicidal light (for 44R Model only)		M1282-9921	
Remote alarm		M1282-8038	

Shaker does not include platforms which must be ordered separately.

Ordering information

Description	Clamp	Order no.
76 x 46 cm aluminum platforms for Innova 44/44R shakers only. (Not interchangeable with other 76 x 46 cm platforms). For a complete list of flask clamps and platform attachments, see pages 50–51.		
Universal platform, (can be used with sticky pad/tape)	—	M1282-9904
125 mL Erlenmeyer flask dedicated platform	60	M1282-9905
250 mL Erlenmeyer flask dedicated platform	40	M1282-9906
500 mL Erlenmeyer flask dedicated platform	24	M1282-9907
1 L Erlenmeyer flask dedicated platform	15	M1282-9908
2 L Erlenmeyer flask dedicated platform	12	M1282-9909
2.8 L Fernbach flask dedicated platform	6	M1282-9910
4 L Erlenmeyer flask dedicated platform	6	M1282-9911
Sticky pad platform (pads sold separately)	—	M1282-9913
Heavy duty 0.95 cm-thick aluminum plate platform for Innova 44/44R shakers only. (Not interchangeable with other 76 x 46 cm platforms.) Heavy-duty platforms are recommended for shaking full loads of flasks, 1 L and larger, containing more than 20 % volume or with baffles. For a complete list of flask clamps and platform attachments, see pages 50–51.		
Universal platform, heavy duty	—	M1282-9915
1 L Erlenmeyer flask dedicated platform, heavy duty	15	M1282-9925
2 L Erlenmeyer flask dedicated platform, heavy duty	12	M1282-9926
2.8 L Fernbach flask dedicated platform, heavy duty	6	M1282-9927
4 L Erlenmeyer flask dedicated platform, heavy duty	6	M1282-9928

Ordering information, optional accessories

Description	Order no.
Riser bases , increases the height of the shaker for easier access	
10.2 cm base riser, short	M1282-0600
30.5 cm base riser, medium	M1282-0800
40.6 cm base riser, tall	M1282-0700
Stacking kit , bolts together shakers for secure mounting	
Stacking kit, for stacking one additional 44 or 44R	M1282-0500

 **Ordering information for other voltage options begins on page 144.**

126 stackable incubator shaker and I26R with added refrigeration



Stacks up to 3 shakers. 2 shakers shown on a medium base

Description

Stackable, incubated I26 and incubated/refrigerated I26R shakers feature New Brunswick's triple-eccentric drive for uniform motion and dependable operation. Based on the design concepts of the Innova® shakers, the I26 and I26R offer excellent performance at a value price.

Product features

- **Advanced features, including triple-eccentric drive**, at an economical price
- **Slide out platform** provides easy access to all samples, including ones located in the back
- **Accepts flasks up to 2.8 Liters**
- **Stack up to 3 units** for maximum capacity while taking up minimal space
- **Large LED display** can be easily seen from across the room



Universal platform shown with clamps, test tube racks and sticky tape.



Dedicated platform

Technical specifications

Description	I26	I26R
Platform size (W x D)	76 x 46 cm	
Temperature range	+5 °C above ambient to 60 °C	15 °C below ambient to 60 °C
Temperature uniformity	+/-0.25 °C at 37 °C	
Orbit	2.5 cm	
Speed (rpm)		
1 unit	25 to 400	
2 stacked units	25 to 300	
3 stacked units	25 to 250	
Innova control programmer		
Timer	0.1 to 99.9 hours + continuous operation	
Memory	Non volatile with automatic power failure restart	
Dimensions (W x D x H)	128.3 x 77 x 70 cm (open door adds 48.4 cm to depth)	
Net weight	168 kg	186 kg

126 stackable incubator shaker and I26R with added refrigeration

Ordering information

Model	Power supply	Order no.	
I26 Incubated	230 V, 50 Hz	M1324-0002	
I26R Incubated/ Refrigerated	230 V, 50 Hz	M1324-0006	

Shaker does not include platform which must be ordered separately.

Ordering information

Description	Clamps 1 Shaker	Clamps 2 Shaker	Clamps 3 Shaker	Order no.	
76 x 46 cm aluminum, slide-out platforms for I26 and I26R shakers only. (Platforms are not interchangeable with other 76 x 46 cm platforms). Clamps and accessories sold separately. See pages 50–51.					
Universal platform	—	—	—	M1324-9904	
125 mL Erlenmeyer flask dedicated platform	60	120	180	M1324-9905	
250 mL Erlenmeyer flask dedicated platform	40	80	120	M1324-9906	
500 mL Erlenmeyer flask dedicated platform	24	48	72	M1324-9907	
1 L Erlenmeyer flask dedicated platform	15	30	45	M1324-9908	
2 L Erlenmeyer flask dedicated platform	12	24	36	M1324-9909	
2.8 L Fernbach flask dedicated platform	6	12	18	M1324-9910	
Sticky pad platform, (sticky pads sold separately)	—	—	—	M1324-9911	

Ordering information, optional accessories

Description	Order no.	
Riser bases , increases the height of the shaker for easier access		
10.2 cm base riser, short	M1324-0600	
33 cm base riser, medium	M1324-0800	
43.2 cm base riser, tall	M1324-0700	
Stacking kit , bolts together shakers for secure mounting		
Stacking kit, for stacking one additional I26 or I26R	M1324-0500	

 **Ordering information for other voltage options**
begins on page 144.

Excella® E24 benchtop incubator shaker and E24R with added refrigeration



Description
The benchtop Excella E24 (incubated) and E24R (incubated/ refrigerated) shaker provides superior performance and advanced features at an affordable price. A wide variety of platforms, clamps and test tube racks provide for virtually unlimited flexibility. The Excella E24 and E24R offer field calibration of temperature and speed through the microprocessor-controlled touch pad.

- Product features**
- **Heavy-duty counterbalanced drive** provides long life and quiet and dependable operation for most loads
 - **Large 46 x 46 cm accessory platform** (sold separately) accommodates flasks up to 2.8 L
 - **Microprocessor controls** enable precise settings of speed and incubation temperature
 - **Unique acceleration/deceleration circuitry** prevents sudden starts and stops protecting your cells
 - **Open lid cut off switch** immediately stops shaking when lid is open
 - **Clear large lid** provides excellent visibility minimizing the need to open the lid to view samples

Technical specifications

Description	Excella E24	Excella E24R
Platform size (W x D)	46 x 46 cm	
Temperature range	+7 °C above ambient to 60 °C	15 °C below ambient to 60 °C
Temperature uniformity	+/-0.5 °C at 37 °C	
Speed (rpm)	50 to 400	
Orbit	1.9 cm	
Dimensions (W x D x H)	56 x 76.2 x 61 cm (open lid requires additional 53.3 cm height)	
Net weight	60 kg	80 kg

Excella® E24 benchtop incubator shaker and E24R with added refrigeration

Ordering information

Model	Power supply	Order no.	
E24 Incubated	230 V, 50 Hz	M1352-0002	
E24R Incubated/ Refrigerated	230 V, 50 Hz	M1352-0006	

Shaker does not include platforms which must be ordered separately.

Ordering information

Description	Clamps	Order no.	
Excella E24 and E24R interchangeable platforms , 46 x 46 cm phenolic resin unless otherwise stated. Clamps and accessories sold separately. See pages 50–51.			
Universal platform, aluminum	—	M1250-9902	
Drip pan for universal platform M1250-9902	—	M1250-9906	
Utility carrier holds glassware between rubber-cushioned cross bars	—	M1194-9909	
Rod kit for utility carrier (one additional rod)	—	M1194-9923	
Utility tray with non-skid surface	—	M1194-9910	
50 mL Erlenmeyer flask dedicated platform	64	M1194-9903	
125 mL Erlenmeyer flask dedicated platform	34	M1194-9904	
250 mL Erlenmeyer flask dedicated platform	25	M1194-9905	
500 mL Erlenmeyer flask dedicated platform	16	M1194-9906	
1 L Erlenmeyer flask dedicated platform	9	M1194-9907	
2 L Erlenmeyer flask dedicated platform	5	M1194-9908	
2.8 L Fernbach flask dedicated platform	4	M1233-9932	
Quick-change platform kit, enables platform attachment without tools	—	M1192-9901	
Sticky pad platform, (sticky pads sold separately)	—	M1250-9903	
Spare parts kit, E24 and E24R	—	M1352-6000	

 **Ordering information for other voltage options**
begins on page 144.

Excella® E25 console incubator shaker and E25R with added refrigeration



Description
The large-capacity console Excella 25 (incubated) and Excella 25R (incubated/refrigerated) shaker provides superior performance and advanced features at an affordable price. A wide variety of clamps and test tube racks provide for virtually unlimited flexibility. The microprocessor controls precisely control temperature and shaking speed and the feedback control and fans provide for rapid temperature recovery when lid is open and accurate and uniform temperatures.

Product features

- **Heavy-duty counterbalanced drive** provides long life and quiet and dependable operation for most loads
- **Large 76 x 46 cm accessory platform** (sold separately) accepts flasks up to 6 L
- **Large insulated viewing window** in the lid allows for clear viewing of the samples without opening the chamber
- **Microprocessor controls** enable precise setting of speed and incubation temperature
- **RS-232** provided for data logging

Technical specifications

Description	Excella E25	Excella E25R
Platform size (W x D)	76 x 46 cm	
Temperature range	+7 °C above ambient to 60 °C	15 °C below ambient to 60 °C
Temperature uniformity	+/-0.5 °C at 37 °C	
Speed (rpm)	50 to 400	
Orbit	2.5 cm	
Dimensions (W x D x H)	127 x 77 x 105.9 cm (open door requires additional 59.1 cm height)	
Net weight	167 kg	196 kg

Excella® E25 console incubator shaker and E25R with added refrigeration

Ordering information

Model	Power supply	Order no.	
E25 Incubated	230 V, 50 Hz	M1353-0002	
E25R Incubated/ Refrigerated	230 V, 50 Hz	M1353-0006	

Shaker does not include platforms which must be ordered separately.

Ordering information

Description	Clamps	Order no.	
Excella E25 and E25R interchangeable platforms, 76 x 46 cm aluminum. Clamps and accessories sold separately. See pages 50–51.			
Universal platform	—	M1250-9920	
Utility tray with non-skid rubber surface	—	AG-00	
50 mL Erlenmeyer flask dedicated platform	108	M1191-9908	
125 mL Erlenmeyer flask dedicated platform	60	M1191-9909	
250 mL Erlenmeyer flask dedicated platform	40	M1191-9910	
500 mL Erlenmeyer flask dedicated platform	24	M1191-9911	
1 L Erlenmeyer flask dedicated platform	15	AG-1	
2 L Erlenmeyer flask dedicated platform	12	AG-2	
2.8 L Fernbach flask dedicated platform	6	AG-28	
4 L Erlenmeyer flask dedicated platform	6	AG-4	
6 L Erlenmeyer flask dedicated platform	4	AG-6	
Platform for sticky pad, (sticky pads sold separately)	—	M1250-9904	

 Ordering information for other voltage options begins on page 144.

Clamps and accessories for universal platforms

Model	Innova 40/40R	Innova 42/42R	Innova 43/43R	
	Excella E24/E24R		Excella E25/ E25R	
Accessory				
10 mL Erlenmeyer flask clamp	109	109	183	
25 mL Erlenmeyer flask clamp	64	64	92	
50 mL Erlenmeyer flask clamp with spring retainer	45	45	92	
125 mL Erlenmeyer flask clamp with spring retainer	21	21	39	
250 mL Erlenmeyer flask clamp with spring retainer	18	18	30	
500 mL Erlenmeyer flask clamp with spring retainer	14	14	18	
1 L Erlenmeyer flask clamp	8	8	12	
2 L Erlenmeyer flask clamp	5	5	8	
2 L Lauber Thompson clamp	5	5	8	
2.8 L Fernbach clamp	4	4	6	
3 L Erlenmeyer flask clamp	4	4	6	
4 L Erlenmeyer flask clamp	—	4	6	
5 L Erlenmeyer flask clamp	—	4	6 ¹	
6 L Erlenmeyer flask clamp	—	2	4 ¹	
Microplate rack (stack)	8	8	16	
Microplate rack (1 layer)	2	2	4	
Small test tube rack	5	5	9	
Medium test tube rack	5	5	9	
Large test tube rack	4	4	7	
Platform size, cm	46 x 46	46 x 46	76 x 46	

¹ Less when used with optional photosynthetic lights. ² Using Sticky Tape – less with clamps. Max flask size is 4 L when using photosynthetic lighting option.

Small test tube racks			
Diameter	Tubes/rack	Order no.	
8–11 mm	48	M1289-0001	
12–15 mm	34	M1289-0002	
15–18 mm	24	M1289-0003	
18–21 mm	18	M1289-0004	
22–26 mm	13	M1289-0005	
26–30 mm	12	M1289-0006	

Medium test tube racks			
Diameter	Tubes/rack	Order no.	
8–11 mm	60	M1289-0010	
12–15 mm	44	M1289-0020	
15–18 mm	31	M1289-0030	
18–21 mm	23	M1289-0040	
22–26 mm	16	M1289-0050	
26–30 mm	16	M1289-0060	

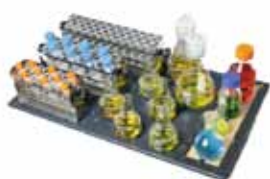
Large test tube racks			
Diameter	Tubes/rack	Order no.	
8–11 mm	80	M1289-0100	
12–15 mm	60	M1289-0200	
15–18 mm	42	M1289-0300	
18–21 mm	30	M1289-0400	
22–26 mm	22	M1289-0500	
26–30 mm	20	M1289-0600	

Ordering information

Description	Order no.	
Sticky Tape, 500 x 4.1 cm roll	M1250-9600	
Sticky Pad, 20.3 x 20.3 cm	M1250-9700	
Sticky Pad Adapter Kit	M1250-9904	
Angled Test Tube Rack Holder	TTR-210	
Spacer for TTR-210	TTR-215	
1 L Media Bottle Clamp	ACSB-1000S	

Clamps and accessories for universal platforms

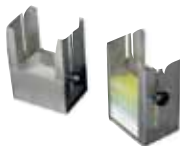
	Innova 44/44R	I Series I26/I26R	Order no.	
	187	187	ACE-10S	
	93	93	M1190-9004	
	91	93	M1190-9000	
	39	39	M1190-9001	
	30	30	M1190-9002	
	24	24	M1190-9003	
	14	12	ACE-1000S	
	8	8	ACE-2000S	
	8	8	M1190-9005	
	6	6	ACFE-2800S	
	6	6	ACE-3000S	
	6	—	ACE-4000S	
	6 ^{1,2}	—	ACE-5000S	
	—	—	ACE-6000S	
	16	16	M1289-0700	
	4	4	TTR-221	
	9	9	see below	
	9	9	see below	
	7	7	see below	
	76 x 46	76 x 46		



Universal platform shown with accessory clamps, test tube racks and sticky tape



Flask clamp, of one-piece stainless steel, fitted with springs for stability at elevated speeds. Includes mounting screws



Microplate racks



Test tube racks, small, medium and large



Dedicated platforms come with clamps of one size pre-installed



Sticky Pad (shown) and sticky tape
Replace clamps for speeds up to 250 rpm. (Not for use in water bath shakers.) Sticky Pad requires an anodized aluminum surface



Utility trays
Utility trays provide a non-slip surface for low-speed applications



Utility carriers
Utility carriers secure vessels between adjustable, cushioned rods

Shaker selection guide – open air models

Open air shakers	Innova®						
Balanced drive mechanism	Triple-eccentric with permanently lubricated ball bearings						
Motor type	Solid state, DC brushless motor						
Audible and visual alarms	Yes						
cETLus and CE marked	Yes						
Timer	0.1 – 99.9 hrs						
(Images not to scale)							
Model	2000	2050	2100	2150	2300	2350	5000
Page	55	55	56	56	57	57	59
Accessories page	68	68	68	68	68	68	68
Platform size (W x D), cm	33 x 28	40.6 x 30.5	45.7 x 45.7	61 x 45.7	76.2 x 45.7	91.4 x 61	Up to Six 82.5 x 68
Benchtop (B) or Console (C)	B	B	B	B	B	B	C
Orbit diameter, cm	1.9	1.9	1.9	1.9	2.5 or 5.1	2.5 or 5.1	5.1
rpm range	25–500	25–500	25–500	25–500	25–500	25–500	25–350
rpm control	±1 rpm	±1 rpm	±1 rpm	±1 rpm	±1 rpm	±1 rpm	±1 rpm
Maximum capacity	Dedicated platform						
10 mL Erlenmeyer flasks	60	86	—	—	—	—	300 x 6 (1800)
25 mL Erlenmeyer flasks	32	48	—	—	—	—	248 x 6 (1488)
50 mL Erlenmeyer flasks	20	35	64	80	108	—	161 x 6 (966)
125 mL Erlenmeyer flasks	12	20	34	48	60	96	99 x 6 (594)
250 mL Erlenmeyer flasks	8	12	25	35	40	70	64 x 6 (384)
500 mL Erlenmeyer flasks	6	8	16	20	24	40	42 x 6 (252)
1 L Erlenmeyer flasks	—	6	9	12	15	—	23 x 6 (138)
2 L Erlenmeyer flasks	—	—	5	8	12	—	70
2.8 L Fernbach flasks	—	—	4	—	6	—	42
4 L Erlenmeyer flasks	—	—	—	—	6	—	18
5 L Erlenmeyer flasks	—	—	—	—	—	—	—
6 L Erlenmeyer flasks	—	—	—	—	4	—	16
Maximum capacity	Universal platform						
10 mL Erlenmeyer flasks	60	86	109	—	183	—	264 x 6 (1584)
25 mL Erlenmeyer flasks	20	32	64	—	92	—	143 x 6 (858)
50 mL Erlenmeyer flasks	15	32	45	63	92	—	143 x 6 (858)
125 mL Erlenmeyer flasks	11	16	21	35	39	75	72 x 6 (432)
250 mL Erlenmeyer flasks	6	10	18	24	30	50	42 x 6 (252)
500 mL Erlenmeyer flasks	4	8	14	20	18	30	33 x 6 (198)
1 L Erlenmeyer flasks	—	—	8	12	12	24	17 x 6 (102)
2 L Erlenmeyer flasks	—	—	5	6	8	15	12 x 6 (72)
2.8 L Fernbach flasks	—	—	4	5	6	12	8 x 6 (48)
4 L Erlenmeyer flasks	—	—	4	5	6	10	16
5 L Erlenmeyer flasks	—	—	4	4	6	10	12
6 L Erlenmeyer flasks	—	—	2	3	4	8	12
Temperature range (in °C) [A = Ambient]							
Automatic water level control							
Dimensions (W x D x H), cm	35.7 x 37 x 14.6	43 x 37 x 14.6	48 x 55.5 x 16.3	60.1 x 59.1 x 16.3	76.2 x 56.6 x 16.3	91.4 x 61 x 16.3	157 x 96.5 x 135
Net weight (kg)	15	16	34	36	48	52	640.1

¹ Half-size platforms also available.

Shaker selection guide – open air models

Excella®					Water bath shakers	
Heavy-duty with permanently lubricated ball bearings					Triple-eccentric	Eccentric
Solid state, DC brushless motor					DC brushless	Variable speed AC
Yes					Yes	Yes
Yes					cETL & CE	cETL & CE
0.1–99.9 hrs					0.1–99.9 hrs	0.1–99.9 hrs
						
E1	E2	E5	E10		Innova 3100	C76
60	61	62	63		64	66
68	68	68	68		68	68
33 x 28	33 x 28	45.7 x 45.7	76.2 x 45.7		30.5 x 42	30.5 x 42
B	B	B	B		B	B
1.9	1.9	1.9	2.5		1.3	1.3
50–400	50–400	50–400	50–400		25–400	50–300
±2 rpm	±2 rpm	±2 rpm	±2 rpm			
Dedicated platform					Dedicated platform ¹	
60	60	—	—		—	—
32	32	—	—		—	—
20	20	64	108		31	31
12	12	34	60		22	22
8	8	25	40		13	18
6	6	16	24		8	8
—	—	9	15		6	6
—	—	5	12		2	2
—	—	4	6		—	—
—	—	—	6		—	—
—	—	—	—		—	—
—	—	—	4		—	—
Universal platform					Universal platform	
60	60	109	183		59	59
20	20	64	92		35	35
15	15	45	92		18	18
11	11	21	39		18	18
6	6	18	30		8	8
4	4	14	18		6	6
—	—	8	12		4	4
—	—	5	8		2	2
—	—	4	6		—	—
—	—	4	6		—	—
—	—	4	6		—	—
—	—	2	4		—	—
					A+5 to 80	A+7 to 80
					Yes	No
40 x 45.5 x 21.6	40 x 45.5 x 21.6	52 x 45.5 x 21.6	76 x 68.3 x 21.6		43 x 70 x 37	54 x 68 x 47
15.9	15.9	39	42		47.6	52

Innova® 2000, 2100 and 2300 Series benchtop open air shakers



Description
Low-profile shakers with triple-eccentric drive for uniform motion and long life, with microprocessor controls for accurate regulation of shaking speeds between 25 and 500 rpm (less with baffled flasks). Includes audible and visual alarms, timer (0–99.9 hrs) with continuous operation or automatic shut-off at the end of the timed study. Models 2000, 2100 and 2300 provide for small, intermediate and large-capacity shaking, respectively. Models 2050, 2150 and 2350 come with additional stabilizing feet and/or counterweight to balance larger loads on oversized platforms.

Technical specifications

Model No.	Innova 2000	Innova 2050	Innova 2100	Innova 2150	Innova 2300	Innova 2350
Page	55	55	56	56	57	57
Platform size (cm)	33 x 28	40.6 x 30.5	45.7 x 45.7	61 x 45.7	76.2 x 45.7	91.4 x 61
Capacity/ flask size ¹	6 x 500 mL	3 x 2 L	5 x 2 L	8 x 2 L	4 x 6 L	6 x 6 L
Orbit (cm)	1.9	1.9	1.9	1.9	2.5 or 5.1	2.5 or 5.1
Overall dimensions, W x D x H (cm)	35.5 x 37 x 14.6	43 x 37 x 14.6	48 x 55.5 x 16.3	60.1 x 59.1 x 16.3	76.2 x 56.6 x 16.3	91.4 x 61 x 16.3
Net weight (kg)	15	16	34	36	48	52

¹ Indicates number of largest flask size with dedicated platform. Universal platform capacity may be less.

Innova® 2000 and 2050 Series benchtop open air shakers



Innova 2000

Innova 2050 with larger platform
for increased capacity

Ordering information

Description	Clamps	Order no.	
Innova 2000 , 220/230 V, 50/60 Hz (platform sold separately)		M1190-0002	
Innova 2000 interchangeable platforms and accessories , 33 x 28 cm stainless steel. Clamps and accessories sold separately. See pages 68–69.			
Universal platform	—	M1001-0240	
Utility carrier holds a variety of glassware between rubber-cushioned cross bars	—	AG2-UT	
Utility tray with non-skid rubber surface	—	AG2-00	
Rod kit for utility carrier (one additional rod)	—	M1001-9920	
10 mL Erlenmeyer flask dedicated platform	60	AG2-10	
25 mL Erlenmeyer flask dedicated platform	32	M1190-9919	
50 mL Erlenmeyer flask dedicated platform	20	M1190-9915	
125 mL Erlenmeyer flask dedicated platform	12	M1190-9916	
250 mL Erlenmeyer flask dedicated platform	8	M1190-9917	
500 mL Erlenmeyer flask dedicated platform	6	M1190-9918	
Capacity upgrade kit, converts Model 2000 to a Model 2050	—	M1190-9910	
Temperature and speed monitoring kit for recording on an external chart recorder	—	M1190-9909	

Ordering information

Description	Clamps	Order no.	
Innova 2050 , 220/230 V, 50/60 Hz (platform sold separately)		M1190-0012	
Innova 2050 interchangeable platforms , 40.6 x 30.5 cm stainless steel. Clamps and accessories sold separately. See pages 68–69.			
Universal platform	—	M1190-9900	
Utility carrier holds a variety of glassware between rubber-cushioned cross bars	—	M1190-9907	
Rod kit for utility carrier (one additional rod)	—	M1190-9920	
Utility tray with non-skid rubber surface	—	M1190-9908	
10 mL Erlenmeyer flask dedicated platform	86	M1190-9901	
25 mL Erlenmeyer flask dedicated platform	48	M1190-9902	
50 mL Erlenmeyer flask dedicated platform	35	M1190-9903	
125 mL Erlenmeyer flask dedicated platform	20	M1190-9904	
250 mL Erlenmeyer flask dedicated platform	12	M1190-9905	
500 mL Erlenmeyer flask dedicated platform	8	M1190-9906	
1 L Erlenmeyer flask dedicated platform	6	M1190-9911	



Ordering information for other voltage options
begins on page 144.

Innova® 2100 and 2150 Series benchtop open air shakers



Innova 2100



Innova 2150 with stabilizing feet and larger platform for increased capacity

Ordering information

Description	Clamps	Order no.	
Innova 2100 , 220/230 V, 50/60 Hz (platform sold separately)		M1194-0002	
Innova 2100 interchangeable platforms and accessories , 45.7 x 45.7 cm phenolic resin unless otherwise stated. Clamps and accessories sold separately. See pages 68–69.			
Universal platform, aluminum	—	M1250-9902	
Drip pan to catch accidental spills for use with universal platform M1250-9902	—	M1250-9906	
Utility carrier holds a variety of glassware between rubber-cushioned cross bars	—	M1194-9909	
Rod kit for utility carrier (one additional rod)	—	M1194-9923	
Utility tray with non-skid rubber surface	—	M1194-9910	
50 mL Erlenmeyer flask dedicated platform	64	M1194-9903	
125 mL Erlenmeyer flask dedicated platform	34	M1194-9904	
250 mL Erlenmeyer flask dedicated platform	25	M1194-9905	
500 mL Erlenmeyer flask dedicated platform	16	M1194-9906	
1 L Erlenmeyer flask dedicated platform	9	M1194-9907	
2 L Erlenmeyer flask dedicated platform	5	M1194-9908	
2.8 L Fernbach flask dedicated platform	4	M1233-9932	
Sticky pad platform (sticky pad sold separately)	—	M1250-9903	
Capacity upgrade kit to convert a Model 2100 to a Model 2150	—	M1194-9926	
Quick-change platform kit, enables platform attachment without tools	—	M1192-9901	
Temperature and speed monitoring kit for recording on an external chart recorder. For Models 2100, 2150, 2300 and 2350 shakers.	—	M1194-9924	

Ordering information

Description	Clamps	Order no.	
Innova 2150 , 220/230 V, 50/60 Hz (platform sold separately)		M1194-0012	
Innova 2150 interchangeable platforms and accessories , 61 x 45.7 cm phenolic resin. Clamps and accessories sold separately. See pages 68–69.			
Universal platform	—	M1194-9912	
Utility carrier holds a variety of glassware between rubber-cushioned cross bars	—	M1194-9921	
Rod kit for utility carrier (one additional rod)	—	M1194-9925	
Utility tray with non-skid rubber surface for low-speed applications	—	M1194-9922	
50 mL Erlenmeyer flask dedicated platform	80	M1194-9915	
125 mL Erlenmeyer flask dedicated platform	48	M1194-9916	
250 mL Erlenmeyer flask dedicated platform	35	M1194-9917	
500 mL Erlenmeyer flask dedicated platform	20	M1194-9918	
1 L Erlenmeyer flask dedicated platform	12	M1194-9919	
2 L Erlenmeyer flask dedicated platform	8	M1194-9920	
Temperature and speed monitoring kit for recording on an external chart recorder. For Models 2100, 2150, 2300 and 2350 shakers.	—	M1194-9924	
Quick-change platform kit, enables platform attachment without tools	—	M1194-9927	

Innova® 2300 and 2350 Series benchtop open air shakers



Innova 2300



Innova 2350 with stabilizing feet and larger platform for increased capacity

Ordering information

Description	Clamps	Order no.	
Innova 2300 , 2.5 cm orbit, 220/230 V, 50/60 Hz (platform sold separately)		M1191-0002	⚡
Innova 2300 , 5.2 cm orbit, 220/230 V, 50/60 Hz (platform sold separately)		M1191-0022	⚡
Innova 2300 interchangeable platforms and accessories , 76.2 x 45.7 cm aluminum. Clamps and accessories sold separately. See pages 68–69.			
Universal platform	—	M1250-9920	
Drip pan to catch accidental spills for use with universal platform, M1250-9920	—	M1250-9921	
Utility tray with non-skid rubber surface for low-speed applications	—	AG-00	
50 mL Erlenmeyer flask dedicated platform	108	M1191-9908	
125 mL Erlenmeyer flask dedicated platform	60	M1191-9909	
250 mL Erlenmeyer flask dedicated platform	40	M1191-9910	
500 mL Erlenmeyer flask dedicated platform	24	M1191-9911	
1 L Erlenmeyer flask dedicated platform	15	AG-1	
2 L Erlenmeyer flask dedicated platform	12	AG-2	
4 L Erlenmeyer flask dedicated platform	6	AG-4	
6 L Erlenmeyer flask dedicated platform	4	AG-6	
2.8 L Fernbach flask dedicated platform	6	AG-28	
Sticky pad platform (sticky pad sold separately)	—	M1250-9904	
Capacity upgrade kit to convert a Model 2300 to a Model 2350	—	M1191-9905	
Quick-change platform kit, enables platform attachment without tools	—	M1191-9904	
Temperature and speed monitoring kit for recording on an external chart recorder. For Models 2100, 2150, 2300 and 2350 shakers.	—	M1194-9924	

Ordering information

Description	Clamps	Order no.	
Innova 2350 , 2.5 cm orbit, 220/230 V, 50/60 Hz (platform sold separately)		M1191-0012	⚡
Innova 2350 , 5.1 cm orbit, 220/230 V, 50/60 Hz (platform sold separately)		M1191-0032	⚡
Innova 2350 interchangeable platforms and accessories , 91.4 x 61 cm marine plywood unless otherwise stated. Clamps and accessories sold separately. See pages 68–69.			
Universal platform	—	PTL-386	
Universal platform, aluminum	—	PTL-393	
Utility tray with non-skid rubber surface	—	AG-21-00	
125 mL Erlenmeyer flask dedicated platform	96	M1191-9912	
250 mL Erlenmeyer flask dedicated platform	70	M1191-9913	
500 mL Erlenmeyer flask dedicated platform	40	M1191-9914	
Temperature and speed monitoring kit for recording on external recorder. For Models, 2100, 2150, 2300 and 2350 shakers.	—	M1194-9924	

⚡ **Ordering information for other voltage options begins on page 144.**

Innova® 5050/5051 racking systems for Innova 2300 shakers



Innova 5050 and 5051 Extension Racks shown. Shakers sold separately.

Description
Model 5050 consists of a sturdy, stainless-steel rack to hold up to 4 Innova 2300 shakers. Innova 5051 rack extension can be added to support an additional 4 shakers, bringing the total number to 8 Innova 2300 shakers.

Product features

- **Each unit includes an electrical strip** for powering the shakers. Shakers must be ordered separately. See page 57 for Innova 2300 shaker and platform ordering information.
- **Maximum speed** – 400 rpm for 2.5 cm orbit, and 300 rpm for 5.1 cm orbit shakers. See chart below for rack capacities.
- **Overall dimensions** 5050 or 5051 – W x D x H: 99.1 x 68.6 x 182.9 cm
- **Net weight** – 227 kg

Ordering information

Model	Description	Power supply	Order no.	
Innova 5050 and 5051	5050 Rack System	230/240 V, 50/60 Hz	M1232-0101	
	5051 Rack Extension	230/240 V, 50/60 Hz	M1232-0111 ¹	

Product features

Flask size	Max. shakers per rack	Max. flasks with Innova 2300	Max. flasks with Innova 5050 Rack	Max. flasks with Innova 5051 Extension
50 mL	4	108	432	864
125 mL	4	60	240	480
250 mL	4	40	160	320
500 mL	4	24	96	192
1 L	3	15	45	90
2 L ²	3	12	36	72

1 Must be used with 5050 Rack system.
2 Larger flasks can be used by removing one or more adjustable-height shelves.

Innova® 5000 multi-tier shaker – an industrial workhorse



Simultaneously agitate hundreds of samples on up to 6 accessory platforms.

Description

Culture hundreds of samples on this industrial workhorse.

Product features

- **Speed:** 25 to 350 rpm (less for baffled flasks)
- **Orbit:** 5.1 cm counterbalanced shaker provides uniform agitation to all samples without being bolted to the floor. Cantilevered design provides unobstructed access to all glassware
- **6 removable platforms** – 82.5 x 68 cm accommodate flasks from 10 mL to 6 L. (Platforms sold separately.) Digital display indicates speed, setpoint, running time and alarm conditions
- **Overall dimensions** – W x D x H: 157.5 x 96.5 x 135 cm
- **Net weight:** 640 kg

Ordering information

Model	Power supply	Order no.	
Innova 5000	220 V, 50/60 Hz	M1196-0002	

Shaker does not include platforms which must be ordered separately.

Ordering information

Description	No. of flasks per platform	No. of flasks per machine	Order no.	
Clamps and accessories sold separately. See pages 68–69.				
Universal platform (each)	—	—	M1196-9447	
125 mL Erlenmeyer flask dedicated platform	99	594	M1196-9900	
250 mL Erlenmeyer flask dedicated platform	64	384	M1196-9901	
500 mL Erlenmeyer flask dedicated platform	42	252	M1196-9902	
1 L Erlenmeyer flask dedicated platform	23	138	M1196-9903	
2 L Erlenmeyer flask dedicated platform	14	70	M1196-9904 ¹	
2.8 L Fernbach flask dedicated platform	9	54	M1196-9905 ¹	
4 L Erlenmeyer flask dedicated platform	9	18	M1196-9906 ²	
6 L Erlenmeyer flask dedicated platform	8	16	M1196-9907 ²	

¹ When used on bottom tier, can only use front half of platform. ² For use on top tier only.

⚡ Ordering information for other voltage options begins on page 144.

Excella® benchtop open air shakers – excellent performance and value

Description

These open air biological shakers from New Brunswick Scientific are offered in 4 models to suit a wide variety of culturing applications. Excella open air shakers combine sleek looks, microprocessor controls and heavy-duty counterbalanced drives to provide years of continuous, quiet operation.

User-friendly keypad and digital displays are provided on all models except the analog E1. Excella shakers are offered with a large selection of accessories to accommodate a wide range of flasks, test tubes and general labware. Platforms are interchangeable with those used on current as well as earlier model New Brunswick shakers. All Excella shakers meet cETLus and CE standards.

Excella® E1 analog-controlled compact open air shaker



Description

Compact and economical E1 shakers easily fit your budget and your bench!

Product features

- **Benchtop shakers** for agitating test tubes and flasks up to 500 mL with analog control
- **Heavy-duty, counterbalanced drive** with DC brushless motor and permanently lubricated ball bearings provides long life and is virtually maintenance free
- **Reference calibrations** allow the shaker to be set manually for reproducible results from one run to the next

Technical specifications

Description	Excella E1
Platform size (W x D)	33 x 28 cm
Controls	Analog dial
Speed (rpm)	50 to 400
Orbit	1.9 cm
Dimensions (W x D x H)	40 x 45.5 x 21.6 cm
Net weight	15.9 kg

Excella® E2 microprocessor controlled and E1 analog-controlled compact open air shakers



Technical specifications

Description	Excella E2
Platform size (W x D)	33 x 28 cm
Controls	Digital LCD
Speed (rpm)	50 to 400
Orbit	1.9 cm
Timer	0.1 to 99.9 hrs, or continuous
Alarms	Audible and visual - End of run - Speed deviates +/-5 rpm from setpoint
Dimensions (W x D x H)	40 x 45.5 x 21.6 cm
Net weight	15.9 kg

Description

Compact and economical Excella E2 shakers easily fit your budget and your bench. Excella E2 offers microprocessor control for precise setting of speed and running times.

Product features

- **Benchtop shakers** for agitating test tubes and flasks up to 500 mL with microprocessor control
- **Heavy-duty, counterbalanced drive** with DC brushless motor and permanently lubricated ball bearings provides long life and is virtually maintenance free
- **Acceleration circuit** prevents sudden starts and stops to minimize splashing in Excella E2

⚡ Ordering information for other voltage options begins on page 144.

Ordering information

Model	Power supply	Order no.	
E2 Open Air	230 V, 50/60 Hz	M1350-0001	⚡
E1 Open Air	230 V, 50/60 Hz	M1354-0001	⚡

Shakers do not include platforms which must be ordered separately.

Ordering information

Description	Clamps	Order no.	
Excella E2 and E1 interchangeable platforms , 33 x 28 cm stainless steel. Clamps and accessories sold separately. See pages 68–69.			
Universal platform	—	M1001-0240	
Utility carrier holds a variety of glassware between rubber-cushioned cross bars	—	AG2-UT	
Utility tray with non-skid rubber surface	—	AG2-00	
Rod kit for utility carrier (one additional rod)	—	M1001-9920	
10 mL Erlenmeyer flask dedicated platform	60	AG2-10	
25 mL Erlenmeyer flask dedicated platform	32	M1190-9919	
50 mL Erlenmeyer flask dedicated platform	20	M1190-9915	
125 mL Erlenmeyer flask dedicated platform	12	M1190-9916	
250 mL Erlenmeyer flask dedicated platform	8	M1190-9917	
500 mL Erlenmeyer flask dedicated platform	6	M1190-9918	

Excella® E5 mid-sized benchtop open air shaker



Description

Microprocessor-controlled benchtop open air shakers for agitating test tubes and flasks up to 6 L.

Product features

- **Mid-sized shaker** accommodates flasks as large as 2.8 liters on a dedicated platform or flasks up to 6 liters on a universal platform
- **Accessory universal platform** accommodates tubes, plates and flasks
- **Heavy-duty, counterbalanced drive** with DC brushless motor and permanently lubricated ball bearings provides long life and is virtually maintenance free

Technical specifications

Description	Excella E5
Platform size (W x D)	45.7 x 45.7 cm
Speed (rpm)	50 to 400
Orbit	1.9 cm
Timer	0.1 to 99.9 hrs
Alarms	Audible and visual ● End of run ● Speed deviates +/-5 rpm from setpoint
Dimensions (W x D x H)	52 x 45.5 x 21.6 cm
Net weight	39 kg

Ordering information

Model	Power supply	Order no.	
E5 Open Air	230 V, 50/60 Hz	M1355-0001	

Shaker does not include platforms which must be ordered separately.

Ordering information

Description	Clamps	Order no.	
Excella E5 interchangeable platforms , 45.7 x 45.7 cm phenolic resin unless otherwise stated. Clamps and accessories sold separately. See pages 68–69.			
Universal platform, aluminum	—	M1250-9902	
Drip pan to catch accidental spills for use with universal platform M1250-9902	—	M1250-9906	
Utility carrier holds a variety of glassware between rubber-cushioned cross bars	—	M1194-9909	
Rod kit for utility carrier (one additional rod)	—	M1194-9923	
Utility tray with non-skid rubber surface	—	M1194-9910	
50 mL Erlenmeyer flask dedicated platform	64	M1194-9903	
125 mL Erlenmeyer flask dedicated platform	34	M1194-9904	
250 mL Erlenmeyer flask dedicated platform	25	M1194-9905	
500 mL Erlenmeyer flask dedicated platform	16	M1194-9906	
1 L Erlenmeyer flask dedicated platform	9	M1194-9907	
2 L Erlenmeyer flask dedicated platform	5	M1194-9908	
2.8 Liter Fernbach dedicated platform	4	M1233-9932	
Sticky pad platform, (sticky pads sold separately)	—	M1250-9903	

Excella® E10 large-capacity benchtop open air shaker



Description

Large-capacity, microprocessor-controlled shakers with digital display.

Product features

- **Durable, large capacity shaker** holds up to four 6 L flasks
- **Easy to program control panel** and bright LED readout displays all important parameters
- **Heavy-duty, counterbalanced drive** with DC brushless motor and permanently lubricated ball bearings provides long life and is virtually maintenance free

Technical specifications

Description	Excella E10
Platform size (W x D)	76.2 x 45.7 cm
Speed (rpm)	50 to 400
Orbit	2.5 cm
Timer	0.1 to 99.9 hrs
Alarms	Audible and visual ● End of run ● Speed deviates +/- 5 rpm from setpoint
Dimensions (W x D x H)	76 x 68.3 x 21.6 cm
Net weight	42 kg

⚡ Ordering information for other voltage options begins on page 144.

Ordering information

Model	Power supply	Order no.	
E10 Open Air	230 V, 50/60 Hz	M1351-0001	⚡

Shaker does not include platforms which must be ordered separately.

Ordering information

Description	Clamps	Order no.	
Excella E10 interchangeable platforms, 76.2 x 45.7 cm aluminum.			
Clamps and accessories sold separately. See pages 68–69.			
Universal platform	—	M1250-9920	
Drip pan to catch accidental spills, for universal platform M1250-9920	—	M1250-9921	
Utility tray with non-skid rubber surface	—	AG-00	
50 mL Erlenmeyer flask dedicated platform	108	M1191-9908	
125 mL Erlenmeyer flask dedicated platform	60	M1191-9909	
250 mL Erlenmeyer flask dedicated platform	40	M1191-9910	
500 mL Erlenmeyer flask dedicated platform	24	M1191-9911	
1 L Erlenmeyer flask dedicated platform	15	AG-1	
2 L Erlenmeyer flask dedicated platform	12	AG-2	
2.8 L Fernbach flask dedicated platform	6	AG-28	
4 L Erlenmeyer flask dedicated platform	6	AG-4	
6 L Erlenmeyer flask dedicated platform	4	AG-6	
Platform for sticky pad, (sticky pads sold separately)	—	M1250-9904	

Innova® 3100 high-temperature water bath shaker



For flasks up to 2 liters

Description

High-temperature water bath shakers for temperatures up to 80 °C. Large-capacity orbital shakers with microprocessor control of speed and temperature. One-piece stainless steel bath.

Product features

- **Adjustable water-level control** automatically replenishes evaporated water. Has drain, water-in and overflow lines.
- **Acceleration circuit** builds up speed slowly avoiding sudden stop/starts and unwanted splashing
- **Deep bath with rounded corners** and baffles allow elevated speeds with minimal splashing or turbulence
- **Heat loss is minimized** with use of optional gable covers
- **Cooling coil optional** for near-ambient and below ambient applications



Half-size platforms with clamps already mounted, provide maximum capacity for shaking different sized flasks on a single water bath shaker.



For high-temperature applications up to 80 °C, choose the stainless steel gable cover.

Technical specifications

Description	Innova 3100
Platform size (W x D)	30.5 x 42 cm
Temperature range	+ 5 °C above ambient to 80 °C
Temperature uniformity	+/-0.25 °C at 37 °C
Speed (rpm)	25 to 400
Orbit	1.3 cm
Innova control programmer	
Timer	0.1 to 99.9 hours + continuous operation
Memory	Non volatile with automatic power failure restart
Dimensions (W x D x H)	43 x 70 x 37 cm
Net weight	47.6 kg



Optional Plexiglas® gable cover minimizes evaporation and speeds heat-up, in applications up to 60 °C.

Innova® 3100 high-temperature water bath shaker

Ordering information

Model	Power supply	Order no.	
3100 Water Bath (platform sold separately)	220/230 V, 50/60 Hz	M1231-0002	

Elevated temperatures attained with aid of a gable cover using bath liquid with a high boiling point to minimize evaporation.
For lower temperatures an optional cooling assembly is available.

Ordering information

Description	Clamps	Order no.	
Innova 3100 interchangeable platforms , 30.5 x 42 cm stainless steel. Clamps and accessories sold separately. See pages 68–69.			
Universal platform	—	M1231-9930	
50 mL Erlenmeyer flask dedicated platform	31	M1231-9933	
125 mL Erlenmeyer flask dedicated platform	22	M1231-9934	
250 mL Erlenmeyer flask dedicated platform	13	M1231-9935	
500 mL Erlenmeyer flask dedicated platform	8	M1231-9936	
1 L Erlenmeyer flask dedicated platform	6	M1231-9937	
2 L Erlenmeyer flask dedicated platform	2	M1231-9938	
Sub-platform for mounting dedicated half-size platforms containing flasks and test-tube racks. Sub-platform holds 2 half-size flask platforms or 4 racks.	—	M1231-9939	
Gable cover, Plexiglas®, for temperatures ≤60 °C		M1231-2010	
Gable cover, stainless steel		M1231-2000	
Cooling coil, factory-installed		M1231-9920	
Spare set of suspension arms		M1231-0730	
Space-saving dolly, for under lab bench operation, 46 cm x 72 cm, W x L		M1195-1020	
Height, shaker on cart 51 cm			
Portable cart, 57 x 87 cm W x L. Height, shaker on cart 108 cm.		M1020-1220	

Ordering information

Description	Half platforms per bath	Clamps per platform	Order no.	
Innova 3100 half-size dedicated platforms , (half platforms require sub-platform listed above)				
50 mL Erlenmeyer flask half platform	2	13	AG7-50	
125 mL Erlenmeyer flask half platform	2	8	AG7-125	
250 mL Erlenmeyer flask half platform	2	5	AG7-250	

Ordering information

Description	Racks per bath	Tubes per rack	Order no.	
Innova 3100 test tube racks				
Rack for 13 mm tubes	4	60	AG7-TT13	
Rack for 16 mm tubes	4	36	AG7-TT16	
Rack for 20 mm tubes	4	29	AG7-TT20	
Rack for 25 mm tubes	4	18	AG7-TT25	

For additional options see pages 68–69.

 **Ordering information for other voltage options begins on page 144.**

C76 high-temperature water bath shaker



Shown with accessory Plexiglas® gable cover

Description
Microprocessor-controlled orbital shaker for applications up to 80°C.

- Product features**
- **High capacity shaking water bath** for all your critical incubations
 - **One piece seamless bath with rounded corners** ensures even heating and easy cleaning
 - **Feedback control of temperature and agitation rate** for reproducible results
 - **Holds up to two 2 L flasks**



Deep-drawn round-cornered bath has no seams or crevices to simplify cleaning. Front and rear snap-in baffles, which minimize splashing, have been removed to show details.

Technical specifications

Description	C76
Platform size (W x D)	30.5 x 42 cm
Temperature range	+ 7 °C above ambient to 80°C
Speed (rpm)	50 to 300
Orbit	1.3 cm
Innova® control programmer	
Timer	0.1 to 99.9 hours + continuous operation
Dimensions (W x D x H)	54 x 68 x 47 cm
Net weight	52 kg

Technical specifications are subject to change without notice.

C76 high-temperature water bath shaker

Ordering information

Model	Power supply	Order no.	
C76 Water Bath	230/240 V, 50/60 Hz	M1248-0003	

Shaker does not include platform which must be ordered separately. See below. Elevated temperatures attained with aid of a gable cover using bath liquid with a high boiling point to minimize evaporation. For lower temperatures an optional cooling assembly is available.

Ordering information

Description	Clamps	Order no.	
C76 interchangeable platforms and accessories, 30.5 x 42 cm stainless steel. Clamps and accessories sold separately. See pages 68–69.			
Universal platform	—	M1231-9930	
50 mL Erlenmeyer flask dedicated platform	31	M1231-9933	
125 mL Erlenmeyer flask dedicated platform	22	M1231-9934	
250 mL Erlenmeyer flask dedicated platform	13	M1231-9935	
500 mL Erlenmeyer flask dedicated platform	8	M1231-9936	
1 L Erlenmeyer flask dedicated platform	6	M1231-9937	
2 L Erlenmeyer flask dedicated platform	2	M1231-9938	
Sub-platform for mounting half-size platforms containing flasks and test tube racks. Sub-platform holds 2 half-size flask platforms or 4 racks.	—	M1231-9939	
Gable cover, stainless steel		M1231-2000	
Gable cover, Plexiglas®, for temperatures ≤60 °C		M1231-2010	
Cooling coil, factory-installed		M1231-9920	
Spare set of arms for affixing platform to water bath		M1248-0730	

Ordering information

Description	Half platforms per bath	Clamps per platform	Order no.	
C76 half-size dedicated platforms, (half platforms require sub-platform listed above)				
50 mL Erlenmeyer flask half platform	2	13	AG7-50	
125 mL Erlenmeyer flask half platform	2	8	AG7-125	
250 mL Erlenmeyer flask half platform	2	5	AG7-250	

Ordering information

Description	Racks per bath	Tubes per rack	Order no.	
C76 test tube racks				
Rack for 13 mm tubes	4	60	AG7-TT13	
Rack for 16 mm tubes	4	36	AG7-TT16	
Rack for 20 mm tubes	4	29	AG7-TT20	
Rack for 25 mm tubes	4	18	AG7-TT25	

For additional options see pages 68–69.

 **Ordering information for other voltage options begins on page 144.**

Clamps and accessories for universal platforms – open air shakers and water baths

Innova® models	Innova 2000	Innova 2050	Innova 2100	
Excella® models	Excella E1, E2		Excella E5	
Accessory				
10 mL Erlenmeyer flask clamp	60	86	109	
25 mL Erlenmeyer flask clamp	20	32	64	
50 mL Erlenmeyer flask clamp with spring retainer	15	32	45	
125 mL Erlenmeyer flask clamp with spring retainer	11	16	21	
250 mL Erlenmeyer flask clamp with spring retainer	6	10	18	
500 mL Erlenmeyer flask clamp with spring retainer	4	8	14	
1 L Erlenmeyer flask clamp			8	
2 L Erlenmeyer flask clamp			5	
2.8 L Fernbach clamp			4	
3 L Erlenmeyer flask clamp			4	
4 L Erlenmeyer flask clamp			4	
5 L Erlenmeyer flask clamp			4	
6 L Erlenmeyer flask clamp			2	
Microplate rack (stack)	3	6	8	
Microplate rack (1 layer)			2	
Small test tube rack	3	4	5	
Medium test tube rack		3	5	
Large test tube rack			4	
Platform size, cm	33 x 28	40.6 x 30.5	45.7 x 45.7	

Small racks			
Diameter	Tubes/rack	Order no.	
8–11 mm	48	M1289-0001	
12–15 mm	34	M1289-0002	
15–18 mm	24	M1289-0003	
18–21 mm	18	M1289-0004	
22–26 mm	13	M1289-0005	
26–30 mm	12	M1289-0006	

Medium racks			
Diameter	Tubes/rack	Order no.	
8–11 mm	60	M1289-0010	
12–15 mm	44	M1289-0020	
15–18 mm	31	M1289-0030	
18–21 mm	23	M1289-0040	
22–26 mm	16	M1289-0050	
26–30 mm	16	M1289-0060	

Large racks			
Diameter	Tubes/rack	Order no.	
8–11 mm	80	M1289-0100	
12–15 mm	60	M1289-0200	
15–18 mm	42	M1289-0300	
18–21 mm	30	M1289-0400	
22–26 mm	22	M1289-0500	
26–30 mm	20	M1289-0600	

Ordering information

Description	Order no.	
Sticky Tape, 500 x 4.1 cm roll	M1250-9600	
Sticky Pad, 20.3 x 20.3 cm	M1250-9700	
Sticky Pad Adapter Kit	M1250-9904	
Angled Test Tube Rack Holder	TTR-210	
Spacer for TTR-210	TTR-215	
1 L Media Bottle Clamp	ACSB-1000S	

Clamps and accessories for universal platforms – open air shakers and water baths

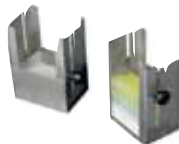
	Innova 2150	Innova 2300 Excelsa E10	Innova 2350	Innova 3100 C76	Order no.	
		183		59	ACE-10S	
		92		35	M1190-9004	
	63	92		18	M1190-9000	
	35	39	75	18	M1190-9001	
	24	30	50	8	M1190-9002	
	20	18	30	6	M1190-9003	
	12	12	24	4	ACE-1000S	
	6	8	15	2	ACE-2000S	
	5	6	12		ACFE-2800S	
	5	6	12		ACE-3000S	
	5	6	10		ACE-4000S	
	4	6	10		ACE-5000S	
	3	4	8		ACE-6000S	
	12	16	27	6	M1289-0700	
	3	4	8		TTR-221	
	8	9	18	4	see below	
	7	9	13	3	see below	
	6	7	12		see below	
	61 x 45.7	76.2 x 45.7	91.4 x 61	30.5 x 42		



Universal platform shown with accessory clamps, test tube racks and sticky tape



Flask clamp, of one-piece stainless steel, fitted with springs for stability at elevated speeds. Includes mounting screws



Microplate racks



Test tube racks, small, medium and large



Dedicated platforms come with clamps of one size pre-installed



Sticky Pad (shown) and sticky tape
Replace clamps for speeds up to 250 rpm. (Not for use in water bath shakers.) Sticky Pad requires an anodized aluminum surface



Utility trays
Utility trays provide a non-slip surface for low-speed applications



Utility carriers
Utility carriers secure vessels between adjustable, cushioned rods

New Brunswick Galaxy® CO₂ incubators



Description

Since 1991, New Brunswick CO₂ incubators have offered researchers and clinical labs a reliable and user-friendly system for culturing cells. **Now, New Brunswick Scientific's Galaxy incubators have been improved to offer even more standard features, better performance and a wider range of options.**

Galaxy CO₂ incubators were the first to offer a direct heat, fanless design – transforming the way cell culture is accomplished and making traditional water-jacketed incubators a rusty relic of the past. By providing more incubation capacity, in a smaller footprint, with more options and a significant decrease in contamination risk compared to water-jacketed systems, Galaxy CO₂ incubators are easier to maintain, setup and utilize, while providing superior performance. These elements have made Galaxy systems a favorite among discerning scientists in *in-vitro* fertilization (IVF), stem cell research, as well as traditional cell culture.

Three sizes and models – 14 to 170 Liters

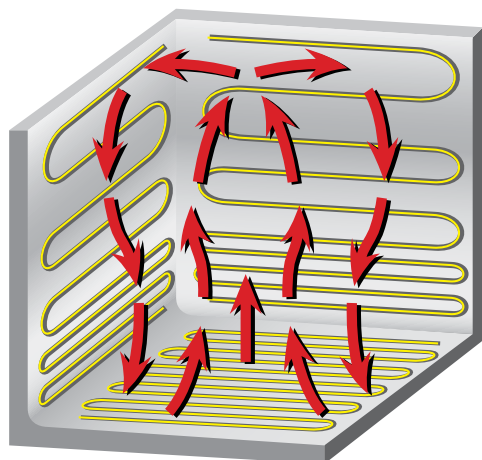
New Brunswick Galaxy incubators are offered in a range of sizes and models, with an unrivaled number of options.

Choose advanced R Series incubators in 48 L and 170 L capacities, or S Series models in 14, 48 and 170 L capacities.

New Brunswick Galaxy® CO₂ incubators

All CO₂ incubators feature:

Six-sided, direct-heating profile – pioneered in Galaxy incubators, the unique direct-heat profile provides a very gentle convection circulation of chamber atmosphere for exceptionally uniform temperature and incubator environment. Unlike traditional forced-air culture systems, our system guards against the wide fluctuations in temperature and CO₂ that can stress cells.



New Brunswick's unique six-sided direct-heating profile produces a very gentle convection circulation of chamber atmosphere for exceptionally uniform temperature and incubator environment. (Three sides shown.)

Fanless design – Galaxy incubators pioneered elimination of conventional fans, replacing them with our unique heating profile, which sets up a gentle circulation of air. By removing the fan, Galaxy incubators have eliminated a classic source of repeated contamination, allowing the entire incubator – including upper shelf – to be utilized while maintaining uniformity. In addition, since there is no fan, there is no need for an expensive internal HEPA filter that needs to be replaced frequently.

IR CO₂ sensor – standard in all models, is our unique InfraRed (IR) CO₂ sensor. This sensor offers specific measurement and accurate control of CO₂ levels. The traditional thermal conductivity (TC) sensor is highly sensitive to changes in chamber humidity and temperature fluctuations, and is therefore fundamentally unsuitable for use in CO₂ incubators. Uniquely, the Galaxy IR sensor can remain in the chamber during the entire high-temperature disinfection cycle, ensuring that all chamber components are sterilized.

Simplified cleaning – on all models, the chambers are pressed from a single sheet of stainless steel, with no welds or seams, eliminating potential sources of contamination. In combination with the easily-removable, replaceable shelves, this makes chamber cleaning a rapid and efficient process, so more time can be spent engaged in science and less with instrument maintenance.

More advanced features

- 25 mm access port – provided on all models for adding instrumentation or additional probes
- RS-232 port – provided on all models for communication and external instrument logging
- Track and trend key operational data using BioCommand® SFI software (see page 30 for details)
- Perforated shelves – optimizes temperature, CO₂ and especially RH recovery to minimize the effects of door openings and closings. Standard on 170 L models; optional on 48 L and 14 L models
- Sealed, inner glass door – On 170 L models provides clear viewing of the chamber while maintaining complete sample and environmental integrity. Minimizes costly CO₂ and N₂ consumption

Options – CO₂ incubators come with a wide variety of options allowing customization to meet your exact requirements and level of sophistication. High-temperature disinfection (HTD) and three levels of oxygen control are just a few of the many available options.

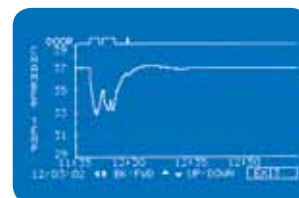
New Brunswick Galaxy® incubator CO₂ guide

CO ₂ incubators					
Standard features					
Direct-heating system	Yes				
Fanless design	Yes				
Seamless chambers	Yes				
IR CO ₂ sensor	Yes				
Model	Galaxy 14 S	Galaxy 48 S	Galaxy 48 R	Galaxy 170 S	Galaxy 170 R
(Images not to scale)					
Page	74	76	76	78	78
Capacity					
L	14	48	48	170	170
Dimensions, W x D x H (cm)					
Internal	23.4 x 20.8 x 29.2	40.1 x 30.5 x 40.1	40.1 x 30.5 x 40.1	53.3 x 44.4 x 69.1	53.3 x 44.4 x 69.1
External	31.2 x 27.9 x 45.2	48.3 x 47.5 x 64.5	48.3 x 47.5 x 64.5	68.6 x 67.8 x 84.3	68.6 x 67.8 x 84.3
Benchtop (B), Under Bench (U), Console (C) or Stackable (S)	B, S (x2)	B, S (x2)	B, C, S (x2)	B, U, C, S (x2)	B, U, C, S (x2)
Features					
Temperature range (°C)	Ambient +4 °C to 50 °C	Ambient +4 °C to 50 °C	Ambient +4 °C to 50 °C	Ambient +4 °C to 50 °C	Ambient +4 °C to 50 °C
Digital display	LED	LED	LCD	LED	LCD
Number of shelves	2	3	3	4	4
25 mm access port	Yes	Yes	Yes	Yes	Yes
Outside door viewing window		Yes	Yes		
Sealed inner glass doors				Yes	Yes
Comm port	RS-232	RS-232	RS-232	RS-232	RS-232
Perforated shelves	Optional	Optional	Optional	Yes	Yes
On-board data logging			Yes		Yes
Net weight (kg)	12.7	31.8	31.8	89.9	89.9
Factory installed options – see page 80 for available combinations					
High-temp disinfection			Yes	Yes	Yes
O ₂ control 0.1 to 19 %			Yes		Yes
O ₂ control 1–95 %			Yes		Yes
Refrigeration system					Yes
Split inner doors 2		Yes	Yes		
Split inner doors 4				Yes	Yes
Split inner doors 8				Yes	Yes
Humidity alert package			Yes		Yes
Internal sealed power supply		Yes	Yes	Yes	Yes
Building management system relays	Yes	Yes	Yes	Yes	Yes
Copper chamber, seamless				Yes	Yes

Advanced features and options



S Series LED display, standard on 170 S, 48 S and 14 S models



R Series LCD display, standard on 170 R and 48 R models



1 piece seamless chamber minimizes contamination risk and simplifies cleaning



Sealed inner glass doors, standard in 170 L models, allows viewing access while maintaining sample integrity



Split inner door option – improves uniformity and reduces gas consumption. 4- & 8-Split doors available on 170 L models. 2-Split doors available on 48 L models.



O₂ control option

- Up to 3 levels of control options: 1–19 %, 0.1–19 % and 1–95 %
- Ideal for stem cell, oncology and IVF studies
- Available on Galaxy® 14 S, 48 R and 170 R

Alarm relay option – available on all models, allows integration with building alarm system

Galaxy® 14 S, 14 liter capacity



Description
The Galaxy 14 S is a micro-sized incubator allowing specific applications to be carried out in isolation from general culture. A 1–19 % O₂ option turns this unit into a hypoxic chamber. Their compact size reduces consumption of costly gases.

- Product features**
- Unique size is ideal for stem cell research, IVF work and isolation of patient-specific samples. (See page 81.)
 - Easily fits in IVF workstations and under laminar flow hoods
 - Seamless, fanless chamber; RS-232 and 25 mm access ports; 1–19 % O₂ and perforated shelf options

Technical specifications

Description	Galaxy 14 S
Volume	14 L
Internal dimensions (W x D x H)	23.3 x 20.8 x 29.2 cm
External dimensions (W x D x H)	31.3 x 28.5 x 45.1 cm
Shelves	2
Temperature range	4 °C above ambient to 50 °C
Uniformity	+/-0.2 °C
LED display readout	Temperature and CO ₂ level
Net weight	13 kg

Galaxy® 14 S, 14 liter capacity

Ordering information

Model	Factory installed options	Order no.	
		230 V, 50/60 Hz	
Galaxy 14 S	—	CO14S-230-0000	
	1–19 % O ₂ control	CO14S-230-0200	
Additional factory installed options – see page 80 for available combinations			
Building management system relays		P0628-6300	
Single inner glass door		P0628-6210	
Accessories – gas management and analysis			
CO ₂ supply line HEPA filters (2)		P0628-5020	
CO ₂ in-line pressure regulator		P0628-5030	
CO ₂ cylinder auto-changeover controller		P0628-5000	
CO ₂ gas analyzer kit		P0628-5040	
Spare CO ₂ gas analyzer tubes (10)		P0628-5050	
Electronic CO ₂ gas analyzer		P0628-6150	
Electronic CO ₂ and O ₂ gas analyzer		P0628-6831	
Temperature probe, 5 mm tip for accessory gas analyzer		P0628-7881	
Temperature probe, 100 mm tip for accessory gas analyzer		P0628-7880	
Calibration gas 5 %, 20 L disposable canister		P0628-7211	
Accessories – shelves, pans and stacking stand			
Multi-position shelf rack		P0628-6170	
Additional shelf, non-perforated		P0628-6180	
Additional shelf, perforated		P0628-7200	
Stacking frame for stacking 2 incubators		P0628-6230	
Accessories – electronics and software			
BioCommand® SFI software, see page 30 for details		M1291-1001	



Ordering information for other voltage options begins on page 144.

Galaxy[®] 48 R and S, 48 liter capacity



Galaxy 48 R

Description

Galaxy 48 R and S incubators are specifically designed for smaller laboratories and applications requiring a higher level of isolation. They provide many of the same standard features as the 170 L systems to provide sophisticated performance in a smaller package, and include a viewing window on the outside door.

Galaxy R Series incubators feature a large backlit display with on screen help menus, control and data logging of temperature, humidity, CO₂, door openings, alarms and optional O₂ gases.

Galaxy 48 S Series incubators are entry-level models, offering the same superior performance as 48 R models, but with an easy-to-use keypad and LED display.

Product features

- Small footprint with mid-sized capacity
- Seamless chamber and fanless design
- RS-232 port and 25 mm access port
- User-friendly LCD display on R models and LED display on S models
- IR sensor
- Low gas consumption
- O₂ control options for hypoxic applications

Technical specifications

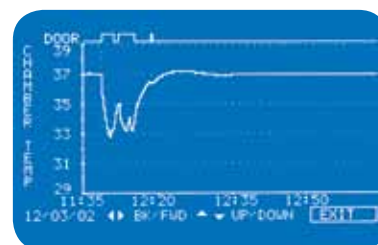
Description	Galaxy 48 R	Galaxy 48 S
Volume	48 L	
Internal dimensions (W x D x H)	40.1 x 30.8 x 40.1 cm	
External dimensions (W x D x H)	48.4 x 47.5 x 64.5 cm	
Shelves	3	
Temperature range	4 °C above ambient to 50 °C	
Uniformity	+/-0.2 °C	
Display readout	Temperature and CO ₂ level 72-hour data / chart logger alarm settings	Temperature and CO ₂ level
Net weight	32 kg	



Viewing window with insulated door eliminates need to open chamber. Included in 48 R and S models.

Technical specifications are subject to change without notice.

Galaxy® 48 R and S, 48 liter capacity



Galaxy 48 R incubators feature a large back-lit display, providing a detailed record of chamber conditions – including an automated 72-hr. record of historical data.

Ordering information

Model	Factory installed options	Order no.	
		230 V, 50/60 Hz	
Galaxy 48 R	—	CO48R-230-0000	
	high-temp disinfection	CO48R-230-1000	
	1–19 % O ₂ Control	CO48R-230-0200	
	high-temp disinfection, 1–19 % O ₂ control	CO48R-230-1200	
Galaxy 48 S	—	CO48S-230-0000	
Additional factory installed options – see page 80 for available combinations			
O ₂ Control, 0.1–19 % (48 R only)		P0628-6280	
O ₂ Control, 1–95 % (48 R only)		P0628-5260	
Building management system relays (48 R)		P0628-5340	
Building management system relays (48 S)		P0628-5341	
Split inner doors - 2		P0628-5330	
Humidity monitor package (display and alarm)		P0628-6770	
Internal sealed power supply (IP66)		P0628-5350	
Accessories – gas management and analysis			
CO ₂ supply line HEPA filters (2)		P0628-5020	
CO ₂ in-line pressure regulator		P0628-5030	
CO ₂ cylinder auto-changeover controller		P0628-5000	
CO ₂ gas analyzer kit		P0628-5040	
Spare CO ₂ gas analyzer tubes (10)		P0628-5050	
Electronic CO ₂ gas analyzer		P0628-6150	
Electronic CO ₂ and O ₂ gas analyzer		P0628-6831	
Temperature probe, 5 mm tip		P0628-7881	
Temperature probe, 100 mm tip		P0628-7880	
Calibration gas 5 %, 20 L disposable canister		P0628-7211	
Control valve and flow indicator for 20 L canister		P0628-6061	
Calibration gas 5 %, 105 L disposable canister		P0628-7210	
0.3 L/min flow regulator with pressure gauge		P0628-7221	
Accessories – shelves, pans and stacking stand			
Multi-position shelf rack		P0628-5100	
Additional shelf, non-perforated		P0628-5070	
Additional shelf, perforated		P0628-5080	
Lower stacking frame, with casters		P0628-5090	
Upper stacking frame		P0628-6720	
Accessories – electronics and software			
BioCommand® SFI software, see page 30 for details		M1291-1001	

Ordering information for other voltage options begins on page 144.

Galaxy® 170 R and S, 170 liter capacity



O₂ control option (170 R)

- 3 control options: 0.1–19 %, 1–19 %, 1–95 %
- Ideal for stem cell, oncology and IVF studies



New cooling system option (170 R)

- Allows for studies at or below ambient temperature
- Refrigerant-free cooling to 10 °C below ambient temperature

Description

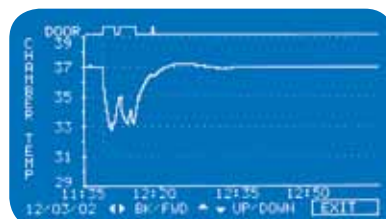
Galaxy 170 incubators offer 170 L of a highly controlled incubation environment, and a tremendous amount of usable space. These units can be used on or under the bench, and are stackable with optional stand. Shelving is easily removable without tools for a rapid wipe down. Offered in both R and S Series models.

Product features

- Standard features include:
 - IR CO₂ sensor
 - sealed inner glass door
 - RS-232 communications port
 - perforated shelves
 - and a 25 mm access port
- R Series – feature an integrated controller for simple on-screen programming of alarms and settings. The R Series allows for the full range of options including O₂ Control, humidity monitoring package, high-temperature disinfection, Active UV-Sterilization and Cooling.
- S Series – A full-featured unit with an LED control system and high-temperature disinfection option

Technical specifications

Description	Galaxy 170 R	Galaxy 170 S
Volume	170 L	
Internal dimensions (W x D x H)	54 x 44.4 x 69.3 cm	
External dimensions (W x D x H)	68.7 x 8 x 84.4 cm	
Shelves	4	
Temperature range	4 °C above ambient to 50 °C	
Uniformity	+/-0.2 °C	
Display readout	Temperature and CO ₂ level 72-hour data / chart logger alarm settings	Temperature and CO ₂ level
Net weight	90 kg	



170 R Series display screens.

Galaxy® 170 R and S, 170 liter capacity

Ordering information

Model	Factory installed options	Order no.	
	230 V, 50/60 Hz	230 V, 50/60 Hz	
Galaxy 170 R	with single glass interior door	CO170R-230-0000	⚡
	high-temp disinfection	CO170R-230-1000	⚡
	1–19 % O ₂ control	CO170R-230-0200	⚡
	high-temp disinfection, 1–19 % O ₂ control	CO170R-230-1200	⚡
Galaxy 170 S	with single glass interior door	CO170S-230-0000	⚡
	high-temp disinfection	CO170S-230-1000	⚡
Additional factory installed options – see page 80 for available combinations			
O ₂ Control, 0.1–19 % (170 R only)		P0628-5410	
O ₂ Control, 1–95 % (170 R only)		P0628-5400	
Cooling system (170 R only)		P0628-6810	
Building management system relays (170 R)		P0628-5540	
Building management system relays (170 S)		P0628-5651	
Split inner doors – 4		P0628-6780	
Split inner doors – 8		P0628-6781	
Humidity monitor package (display and alarm) for 170 R		P0628-6820	
Internal sealed power supply (IP66)		P0628-5560	
Copper chamber		P0628-5612	
Accessories – gas management and analysis			
CO ₂ supply line HEPA filters (2)		P0628-5020	
CO ₂ in-line pressure regulator		P0628-5030	
CO ₂ cylinder auto-changeover controller		P0628-5000	
CO ₂ gas analyzer kit		P0628-5040	
Spare CO ₂ gas analyzer tubes (10)		P0628-5050	
Electronic CO ₂ gas analyzer		P0628-6150	
Electronic CO ₂ and O ₂ gas analyzer		P0628-6831	
Temperature probe, 5 mm tip for gas analyzer		P0628-7881	
Temperature probe, 100 mm tip for gas analyzer		P0628-7880	
0.3 L/min flow regulator with pressure gauge ¹		P0628-7221	
Accessories – shelves, pans and stacking stand			
Multi-position shelf rack (standard on 170 R, optional on 170 S)		P0628-6390	
Additional shelf, non-perforated		P0628-6241	
Additional shelf, perforated		P0628-6251	
Lower and upper stacking frame, with casters		P0628-6270	
Lower stacking frame, with casters		P0628-6490	
Accessories – electronics and software			
BioCommand® SFI software, see page 30 for details		M1291-1001	

Note: Units equipped with optional Cooling System not available with high-temperature disinfection.

¹ For reusable 105 L cylinder.

⚡ Ordering information for other voltage options begins on page 144.

Combining the additional factory installed options for Galaxy® 14, 48 and 170 incubators

Galaxy incubators are offered with multiple options, but not every option can be combined. These charts indicate available combinations. Select a standard or pre-configured incubator from column one. Read across. Bullets identify additional available

options. Order both the incubator (part no. listed in column one) and the additional option order no. (i.e. P0628-xxxx). For other options, contact your sales representative.

Factory installed options available on Galaxy 14 S

Model	Alarm relay	Inner glass door
Order no.	P0628-6300	P0628-6210
Galaxy 14 S, Standard CO14S-230-0000	•	•
Galaxy 14 S, O ₂ control (1–19 %) CO14S-230-0200	•	•

Factory installed options available on Galaxy 48 R and 48 S

Model	O ₂ control 1–19 %	O ₂ control 1–95 %	Alarm relay	Split inner glass door	Internal power receptable	Humidity alert package
Order no.	P0628-6280	P0628-5260	P0628-5340 ¹ P0628-5341 ²	P0628-5330	P0628-5350	P0628-6770
Galaxy 48 S, Standard CO48S-230-0000			•	•	•	
Galaxy 48 R, Standard CO48R-230-0000	•	•	•	•	•	•
Galaxy 48 R, High-Temp Disinfection CO48R-230-1000	•	•	•	•	•	•
Galaxy 48 R, O ₂ control (1–19 %) CO48R-230-0200			•	•	•	•
Galaxy 48 R, High-Temp Disinfection and O ₂ control (1–19 %) CO48R-230-1200			•	•	•	•

¹ for Galaxy 48 R. ² for Galaxy 48 S.

Factory installed options available on Galaxy 170 R and 170 S

Model	O ₂ control 0.1–19 %	O ₂ control 1–95 %	4-Split in- ner door	8-Split in- ner door	Peltier cooling system	Humidity alert package	Copper chamber
Order no.	P0628-5410	P0628-5400	P0628-6780	P0628-6781	P0628-6810	P0628-6820	P0628-5612
Galaxy 170 S, Standard CO170S-230-0000			• ³	• ⁴			•
Galaxy 170 S, High-Temp Disinfection CO170S-230-1000			• ³	• ⁴			•
Galaxy 170 R, Standard CO170R-230-0000	•	•	• ³	• ⁴	• ⁵	•	•
Galaxy 170 R, High-Temp Disinfection CO170R-230-1000	•	•	• ³	• ⁴	• ⁵	•	•
Galaxy 170 R, O ₂ control (1–19 %) CO170R-230-0200			• ³	• ⁴	• ⁵	•	•
Galaxy 170 R, High-Temp Disinfection and O ₂ control (1–19 %) CO170R-230-1200			• ³	• ⁴	• ⁵	•	•

Most combinations are available, however some are not. 3 cannot be combined with 4. 5 cannot be combined with 6 (i.e. Galaxy CO-170R + 1–95 % O₂ + 8 Split-Door + Humidity Package is not available whereas Galaxy CO-170R + 1–19 % O₂ + 8 Split Door + Humidity Package is available.)

Galaxy® CO₂ incubators – ideal for stem cell applications

Stem cell applications

Stem cell research is advancing at a rapid pace and recent studies have shown that for many cell types, an environment closer to the physiological oxygen concentrations (2–5 %) the cells normally encounter in-vivo can result in:

- Smaller cells with reduced complexity
- Reduced spontaneous differentiation
- Increased clonogenicity
- Reduced spontaneous chromosomal aberration frequencies
- Extensive propagation of specialized clonal derivative cells

New Brunswick CO₂ incubators offer a direct-heating system which gently bathes cells in warm convected air. In addition, we offer highly regulated CO₂ and O₂ environments with the

ability to closely mimic physiological normoxic conditions and to provide the optimal environment for stem cell work. Rapidly emerging stem cell technology requires a greater sophistication in the incubation process than traditional incubators can provide.

With the availability of three different ranges of oxygen control (0.1–19 %, 1–19 %, 1–95 % O₂ ranges)

New Brunswick incubators offer stem cell scientists greater choice and flexibility in controlling cellular O₂ levels than any other brand of CO₂ incubator. The features and design of New Brunswick incubators make them ideal for this critical and sensitive emerging field of study.

PourMatic® Model MP-1000 – automated plate pouring system



For 60 or 100 mm plates.

Description

Dependable, automated petri dish pouring system.

Capacity: holds up to 320 petri dishes

(100 x 15 mm, or 60 x 15 mm) with a dispensing capacity

of 5–40 mL. Pours and stacks 320 plates in about 20 minutes.

Features

- Simple dispense line connection using the Masterflex EZ Load Pump head.
- Advanced Features: optional conversion kits allow easy conversion of 100 mm plate instrument to 60 mm plates and vice versa. A coding ink jet printer is available for printing directly onto the plates. Contact your local NBS sales representative for details.

Technical specifications

Description	PourMatic Model MP-1000
Overall dimensions (W x D x H)	52 x 61 x 86.4 cm
Net weight	36.3 kg
Certification	CE & cETL

Ordering information

Model	Plate Size	Power supply	Order no.	
PourMatic, automated dish filler	100 mm	220 V, 50 Hz	M1224-0006	⚡
	60 mm	220 V, 50 Hz	M1224-0005	⚡

Ordering information

Description	Order no.	
Accessories		
Spring Clamp for securing tubing	P0160-4440	
Dispensing Line Kit, includes stainless steel plug-in deflecting nozzle, 3.7m silicone tubing, 2 spring lamps	M1224-3000	
UV Lamp, 4 watts (spare)	P0300-0350	
Silicone Tubing, 7.6 m, 4.8 mm inner diameter	P0740-2505	
Conversion Kit from 100 mm to 60 mm plates	M1224-0160	
Conversion Kit from 60 mm to 100 mm plates	M1224-0100	
Dual Nozzle Kit for Pouring Bi-Plates comes complete with one additional Masterflex quick-load pump head	M1224-0110	
Dispensing Nozzle, stainless-steel (spare)	M1224-9200	
Foot Pedal Pump Switch, factory installed	M1224-9740	
Ink Jet Printer (Requires bracket assembly below), installation & training also available	P0620-6430	
Bracket Assembly for Ink Jet Printer (must be used with printer above)	M1240-1000	

⚡ Ordering information for other voltage options begins on page 144.

Tissue/Microbial culture roller drum, TC-7 and TC-8



Description

The TC-7 and TC-8 Roller Drums are precision tools designed for the growth of mini preps, tissue, viral and bacterial cultures by the roller tube method. They are quiet running and ruggedly built to provide many years of continuous service, even under incubated temperatures. A powerful ball-bearing drive imparts uniform rotary motion to all tubes, maintaining constant speed with heavy workloads.

Product features

- Interchangeable drums – accommodate 13 mm, 16 mm, 18 mm and 25 mm test tubes and 50 mL centrifuge tubes. Drums can be used as carrying trays or storage racks. Sold separately.
- Speed: 6 to 56 rpm in Model TC-7 and 0.2 to 3.5 in Model TC-8
- Overall dimensions: 37.4 x 34 x 46 cm (W x D x H max.) (Height varies dependent on angle adjustment)
- Net weight: 7.3 kg

Ordering information

Model	Speed (rpm)	Power supply	Order no.	
TC-7	6–56	220/230 V, 50/60 Hz	M1053-4005	⚡
TC-8	0.2–3.5	220/230 V, 50/60 Hz	M1053-5005	⚡

Ordering information

Description	Order no.	
Interchangeable roller drums, 36 cm diameter		
Holds 164 test tubes 16 mm and smaller	ATC-TT16	
Holds 164 test tubes 18 mm and smaller	M1053-0450	
Holds 80 test tubes 25 mm and smaller	ATC-TT25	
Holds 46 size 50 mL centrifuge tubes, 30 mm and smaller	M1053-0360	
Holds 311 test tubes, 13 mm diameter x 100 mm length	M1053-0306	

⚡ Ordering information for other voltage options begins on page 144.

New Brunswick fermentor/bioreactor selection guide

Model	CelliGen® BLU Single-Use Bioreactor	BioFlo®/CelliGen 115 Fermentor/ Bioreactor	BioFlo 310 Fermentor	CelliGen 310 Bioreactor	
					
Page	88	95	102	106	
Total Volume	5.0 - 14.0 L	1.3 - 14.0 L	2.5 - 14.0 L	2.5 - 14.0 L	
Working Volume	1.3 - 10.5 L	0.4 - 10.5 L	0.8 - 10.5 L	0.8 - 10.5 L	
Sterilization Method	Single-Use	Autoclavable	Autoclavable	Autoclavable	
Bacteria/Yeast/Fungi		Yes	Yes		
Plant/Algae		Yes	Yes	Yes	
Mammalian/Animal	Yes	Yes	Yes	Yes	
Insect	Yes	Yes	Yes	Yes	
Interchangeable Vessels	Yes	Yes	Yes	Yes	
Controller	Reactor Process Controller	Reactor Process Controller	Reactor Process Controller	Reactor Process Controller	
Touchscreen Controller	Yes	Yes	Yes	Yes	
Heat Induction			Yes		
Air Flow Control	Rotameter or Thermal Mass Flow Controller	Rotameter or Thermal Mass Flow Controller	Rotameter or Thermal Mass Flow Controller	Rotameter or Thermal Mass Flow Controller	
Gas Mixing Options	3/4 Gas	2/3/4 Gas	2/3/4 Gas	2/3/4 Gas	
Validatable	Yes		Yes	Yes	

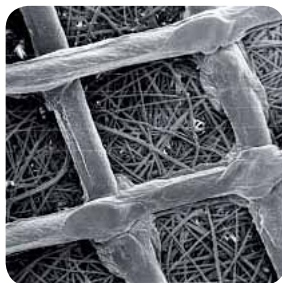
New Brunswick fermentor/bioreactor selection guide

	BioFlo 415 Fermentor	BioFlo 510 Fermentor	CelliGen 510 Bioreactor	BioFlo 610 Fermentor	BioFlo Pro Fermentor	CelliGen Pro Bioreactor
						
	111	113	113	115	117	117
	7.0 - 19.5 L	19.5 - 40.0 L	19.5 - 40.0 L	65.0 - 125 L	75.0 - 3000 L	75.0 - 650 L
	2.0 - 15.5 L	5.2 - 32.0 L	5.2 - 32.0 L	13.0 - 100 L	32.0 - 2400 L	18.8 - 520 L
	Sterilizable-in-Place	Sterilizable-in-Place	Sterilizable-in-Place	Sterilizable-in-Place	Sterilizable-in-Place	Sterilizable-in-Place
	Yes	Yes		Yes	Yes	
	Yes	Yes	Yes	Yes	Yes	Yes
			Yes			Yes
			Yes			Yes
	Yes					
	Reactor Process Controller	Reactor Process Controller / Programmable Logic Controller	Reactor Process Controller / Programmable Logic Controller	Reactor Process Controller	Programmable Logic Controller	Programmable Logic Controller
	Yes	Yes	Yes	Yes	Yes	Yes
	Yes	Yes		Yes	Yes	
	Rotameter or Thermal Mass Flow Controller	Rotameter or Thermal Mass Flow Controller	Rotameter or Thermal Mass Flow Controller	Rotameter or Thermal Mass Flow Controller	Rotameter or Thermal Mass Flow Controller	Rotameter or Thermal Mass Flow Controller
	2/3/4 Gas	1/2 Gas	3/4 Gas	1/2 Gas	1/2 Gas	4 Gas
	Yes	Yes	Yes	Yes	Yes	Yes

Fibra-Cel® disks: a solid-support growth matrix for mammalian, animal and insect cells



Fibra-Cel disks



High resolution micrograph of Fibra-Cel Disks showing polyester mesh with polypropylene support

Description

Fibra-Cel is a solid support growth matrix for mammalian, animal and insect cells, used predominantly for production of secreted products such as recombinant proteins and viruses. Fibra-Cel enables sustained long-term periods of high-density growth in perfusion, without danger of clogging; and eliminates the need for cell filtration to separate cells from the end product. It is used in New Brunswick's CelliGen® BLU, 310, 510 and Pro Bioreactors, and is available for use with disposable bags or other bioreactor systems.

Technical specifications

Disk Diameter	6 mm
Autoclavable	Yes
Endotoxin tested	Yes
Bioburden tested	Yes
Cytotoxicity tested	Yes
USP class VI	Yes
Typical quantity of Fibra-Cel used	
FibraStage	10 g
2.5 L vessel	50 g
5.0 L vessel	150 g
7.5 L vessel	250 g
14.0 L vessel	500 g
Cells Successfully Grown on Fibra-Cel disks	
Hybridoma	DA4.4, 123A, 127A, GAMMA, 67-9-B
Anchorage-Dependent	Human Osteosarcoma, MRC-5, BHK, VERO, CHO, rCHO-tPA, rCHO-Hep B Surface Antigen, HEK 293, rHEK 293, rC127-Hep Surface Antigen, Normal Human Fibroblasts, Stroma, Hepatocytes
Insect	Tn-368, SF9, rSF9, Hi-5

Product features

- **Anchorage-dependent cultures:** cell density and productivity can be up to ten times higher when using Fibra-Cel disks instead of ordinary microcarriers
- **Suspension cultures:** disks are electrostatically treated to facilitate suspension cells adhering to the disk and becoming entrapped in the disks' fiber system, where they remain throughout the process
- **Disk composition:** manufactured to cGMP guidelines, composed of USP Class VI polypropylene and polyester non-woven fiber
- **Attachment:** cells can attach within 15-60 minutes on Fibra-Cel, compared to approximately six hours for cells to attach to ordinary microcarriers. Fibra-Cel bed is inoculated in a single step – no periodic stoppage needed to stir cells
- **Convenient harvesting:** simple and efficient separation of biomass from secreted products
- **Advantages over standard microcarriers:**
 - Low pressure drop across the bed for easier scale-up
 - High surface-to-volume ratio increases the total biomass that can be maintained in the bioreactor for higher productivity
 - Cells are less susceptible to shear forces from impeller blades and sparger gas bubbles as they remain entrapped in the disk bed, shielded from turbulence
 - Higher mass transfer of nutrients and oxygen across the disk bed results in cells that are just as viable at the bottom of the bed as they are at the top

Ordering information

Description	Order no.	
Fibra-Cel Disks, 50 g	M1292-9984	
Fibra-Cel Disks, 250 g	M1292-9988	

FibraStage™ replacement parts

Ordering information

Description	Order no.	
Standard Systems		
FibraStage Disposable Bottles, Pack of 4	M1327-9980	
FibraStage Adapter (required for Europe)	P0620-6460	
FibraStage Bottle Opener (To open bottle for harvesting disks)	P0640-0518	
Glucose Monitoring Kit (Includes 50 test strips)	P0440-0500	
Glucose Test Strips (Includes 50 test strips)	P0440-0508	
9-Pin Signal Cable	P0620-6470	
Crystal Violet dye (100 mL for cell counting – Nucleus counting kit)	P0640-0610	
Cell Dissociation Tool (to compress the bottom of the bottle)	P0640-0600	
FibraStage Bottle Cap	P0640-0620	
Continuous Systems		
Continuous System Disposable Bottles, Pack of 4	M1327-9981	
FibraStage 3-Head Pump (3 individually controlled motor units) tubing & pump head not included.	P0620-3040	
Tubing Set & Pump Head (Includes 1 set of tubing, tubing connectors and pump head)	P0740-2730	
Tubing Only (Includes 5 sets of tubing)	P0740-2740	
2 L Media Addition Bottle	M1362-9902	

CelliGen® BLU bioreactor with single-use vessels



Description

CelliGen BLU is a benchtop bioreactor that combines all the convenience of single-use technology with the trusted performance, advanced process management and scalability of a stirred-tank design. Ideal for research or production.

Product features

- **Applications:** Mammalian and animal cell lines in batch, fed-batch and continuous culture
- **Single-use vessel*:** Interchangeable, single-use, rigid-wall vessels, offered in 5.0 and 14.0 liter (total volume) capacities. All components are pre-validated, pre-sterilized and constructed from USP Class VI materials, making them acceptable for GMP environments. Pre-sterilization eliminates the need for autoclaving, and facilitates rapid turn-around between runs. Includes pitched-blade or packed-bed impeller, tubing, filters, and headplate penetrations for RTD temperature sensor, pH and DO probes, addition (three), sample, harvest, overlay, and sparge
- **Sophisticated control station:** Compact benchtop design with powerful RPC (Reactor Process Controller) provides integrated control of up to 32 process parameters, trends up to 8 parameters simultaneously, stores up to 10 recipes, and provides built-in security features. See page 94. Includes industrial touchscreen interface with adjustable-position, 38.1 cm (15 inch) color display; 3 integrated pumps; magnetic-drive motor; temperature control; pH, DO, and 3- or 4-gas mixing; 2 USB ports; and 7 analog inputs and 7 outputs to add ancillary devices
- **Gas flow control:** Thermal Mass Flow Controller (TMFC) options for sparge line and gas overlay
- **Additional options:** Scale for measuring additions and level; validation package, and more. Related accessories, including BioCommand® SCADA Software, gas analyzers and more are described beginning on page 120

(*) Other vessel sizes and configurations are available. Contact your sales representative for details.



Single-use vessels are pre-sterilized, ready for immediate use. Just add media and inoculate. Includes impeller, sparge, tubing and filters.

NEW - CelliGen BLU Single-use vessels can now be used with your existing bioreactor. See CelliGen BLU adapter kits page 90.

CelliGen® BLU – ordering information

Ordering information – vessel kits

Description	Vessel Volume	Order no.	
Vessel kit – includes heat blanket, RTD temperature sensor, pH and DO probes with cables, and needle-free syringes (vessel not included)	Kit for 5.0 L vessels	M1363-0105	
	Kit for 14.0 L vessels	M1363-0114	

Ordering information – single-use vessels

Description	Vessel Volume	Quantity	Order no.	
Single-Use Vessel(s) – includes Microsparge and Pitched Blade Impeller (items in Vessel Kits not included)	5.0 L	1 vessel	M1363-0125	
		4 vessels	M1363-0127	
	14.0 L	1 vessel	M1363-0126	
		4 vessels	M1363-0128	
Single-Use Vessel(s) – includes Macrosparge and Pitched Blade Impeller (items in Vessel Kits not included)	5.0 L	1 vessel	M1363-0121	
		4 vessels	M1363-0123	
	14.0 L	1 vessel	M1363-0122	
		4 vessels	M1363-0124	

Ordering information – accessories and replacement parts

Description	Order no.	
Media/Supplement Addition Kits		
500 mL Media/Supplement Addition Kit	P0640-8860	
1.0 L Media/Supplement Addition Kit	P0640-8861	
5.0 L Media/Supplement Addition Kit	P0640-8862	
10.0 L Media/Supplement Addition Kit	P0640-8863	
"Y" Connector for custom manifolds	P0620-0947	
Validation		
CelliGen BLU Controller Validation Package	M1363-0101	
CelliGen BLU Vessel Validation Package	M1363-0061	

Ordering information – accessories and replacement parts

Description	Order no.	
Additional Accessories		
Connection Kit	M1363-0112	
Pressure Regulator Kit	M1363-5002	
Needle-Free Syringe, pack of 10	M1363-9910	
Polysulfone Quick Connect (male) 0.635 cm	P0240-2670	
Replacement Parts		
pH Probe, 5.0 L, includes cable	P0300-2371	
pH Probe, 14.0 L, includes cable	P0300-2370	
DO Probe, 5.0 L	P0720-6524	
DO Probe, 14.0 L	P0720-6523	
DO Cable, 5.0 L & 14.0 L	P0720-2338	
Heat Blanket, 5.0 L	M1363-8012	
Heat Blanket, 14.0 L	M1363-8013	

Additional related accessories, including BioCommand® SCADA Software, chillers, gas analyzers and more are described on pages 120 - 131.

CelliGen® BLU adapter kits for existing autoclavable bioreactors



NEW!

Applications: Adapt your existing autoclavable bioreactor for use with New Brunswick Scientific's CelliGen BLU single-use vessels, without the expense of replacing the entire controller.

Description
New Brunswick's adapter kits enable 5 & 14 liter CelliGen BLU single-use vessels to be used with a range of existing bioreactor systems to save time and labor, as well as reduce validation and utility requirements. Three adapter kits are currently offered, with additional kits in development. Vessels sold separately – see page 89.



Adapter kits are offered for your Applikon® BioBundle™ bioreactors and for New Brunswick's CelliGen 115 & 310 bioreactors. Single-use vessels sold separately

Ordering information

Description	Order no.	
Adapter kit for Applikon® BioBundle™ controller with P100 motor*1		
Adapter kit – BLU vessel to Applikon® controller with P100 motor, 5 L, 230 V	M1376-9923	⚡
Adapter kit – BLU vessel to Applikon® controller with P100 motor, 14 L, 230 V	M1376-9924	⚡
Adapter kit for BioFlo/CelliGen 115 controller*2		
Adapter kit – BLU vessel to BioFlo/CelliGen 115 controller, 5 L, 120–230 V	M1376-9941	
Adapter kit – BLU vessel to BioFlo/CelliGen 115 controller, 14 L, 120–230 V	M1376-9942	
Adapter kit for CelliGen 310 controller*3		
Adapter kit – BLU vessel to CelliGen 310 controller, 5 L, 230 V	M1376-9929	⚡
Adapter kit – BLU vessel to CelliGen 310 controller, 14 L, 230 V	M1376-9930	⚡

*1 Includes sparge/overlay tube sets, heat blanket, motor adaptor, RTD and exhaust heater.
*2 Includes sparge/overlay tube sets, heat blanket, RTD and exhaust heater. Requires CelliGen 115 magnetic drive (order number M1369-3130).
*3 Includes sparge/overlay tube sets, heat blanket, motor adaptor, RTD, water circulation drawer to heat blanket converter and exhaust heater.

Recommended probe lengths for CelliGen BLU Single-Use Vessels

Probe	5 L Vessel	14 L Vessel
pH	200 mm	325 mm
DO	225 mm	355 mm

⚡ Ordering information for other voltage options begins on page 144.



- Single-Use, Autoclavable and SIP vessel options



- Advanced process control software



- 1 - 650 L capacities

**Now!
Use Your
Existing Bioreactor
with Our Single-
Use Vessels**



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Better Bioreactors. Better Growth.

For over 40 years, New Brunswick has manufactured a wide range of bioreactors ideal for growing mammalian, insect or plant cultures in research or cGMP production.

Whether you prefer the convenience of a single-use system, or a traditional autoclavable or SIP bioreactor, count on New Brunswick for all your culture needs. We now even offer adapter kits to enable your existing autoclavable bioreactor to be used with our CelliGen BLU single-use vessels.

New Brunswick Bioreactors feature:

- Unique impeller designs to optimize growth and production, including packed-bed basket impellers for secreted proteins and low-shear Cell-Lift impellers for microcarrier cultures
- Allen Bradley PLC control option available on SIP systems
- Unrivalled support, including training, setup assistance, and preventive maintenance packages, plus in-house labs to assist with process development, scale-up and optimization



New Brunswick
an eppendorf company

A guide to impeller selection in fermentors and bioreactors

When growing Eukaryotes or Prokaryotes in a stirred-tank reactor, it's critical to choose the impeller type best suited to your process. This article provides a brief overview of our impellers and how they work, to guide you in selecting the best impeller for your application. For a table of cell lines commonly used in fermentation and cell culture processes, matched with the impeller(s) best suited for their growth, see our website at www.nbsc.com/papers or contact us for assistance.

Cell Lift impellers for microcarrier culture

The Cell Lift impeller, designed by New Brunswick Scientific, provides uniform circulation for microcarrier cultures. This is an ultra-low-shear impeller, in which the flow is caused by three discharge ports located on the impeller shaft. The rotation of the ports creates a low differential pressure at the base of the impeller tube, lifting the microcarriers up through the tube and expelling them out through the ports. This continuous recirculation loop keeps the cells uniformly dispersed throughout the vessel.



Cell Lift Impeller

Gases are introduced through a ring sparger, which generates bubbles which pass along the impeller between the exterior of the inner tube and an outer membrane known as the aeration cage. A mesh lining, on the outer membrane of the cage, has 85 µm penetrations small enough to ensure that cells growing on the microcarriers cannot pass through. Gas exchange occurs at the membrane-media interface, ensuring that the cells remain in a bubble-free environment and are not subjected to shear due to bubble breakage. The bubbles are then expelled out the ports, located at the top of the impeller, into a second screened-in cage. A foam breaker directs air, supplied by a gas overlay, into the cage to break up any foam that has developed.

The Cell Lift impeller can be used in batch and fed-batch processes of shear-sensitive animal cells. It can also be used for continuous perfusion processes with the addition of a decanting column(s) and a media feed in/broth pump out setup.

Packed-bed basket impellers for secreted products

Another unique New Brunswick Scientific design, the packed-bed basket impeller is used primarily for manufacturing high yields of secreted products from anchorage-dependent or suspension cultures in perfusion. The basket is comprised of two horizontally-positioned, perforated metal screens that extend to the vessel walls. Enclosed between the screens, a bed of Fibra-Cel disks serves as a solid support matrix for cell growth. Cells growing in the disk bed become immobilized on or between the disks, where they remain throughout the culture run, protected from external shear forces. Media is circulated by way of a hollow impeller tube with discharge ports positioned above the basket. Like the Cell Lift impeller, rotation of these discharge ports creates a low differential pressure at the base of the impeller tube, which circulates the media throughout the system. The media receives gases through a sparger located at the bottom of the inner tube, protecting the cells from being exposed to the gas liquid interface. This results in low turbulence and low shear stress on the culture. Exceptionally high cell densities are achievable due to the high surface-to-volume ratio provided by the disk bed, coupled with the ability to use perfusion.



Basket with Fibra-Cel

Impeller selection guide (continued)

Rushton-type impellers ideal for fermentation

The blades of Rushton and Rushton-type impellers are flat and set vertically along the agitation shaft, producing a unidirectional radial flow. These impellers are commonly used in fermentations of cell lines that require high oxygen rates, such as yeast, bacteria, and some fungi.



Rushton-type Impeller

Marine blade impellers for shear-sensitive microorganisms

The leading face of the blades on this impeller can be flat or concave, while the back side is convex, producing an axial flow. Marine Blade impellers are used for applications requiring gentle mixing without causing cell damage. Due to their unidirectional flow, however, the $K_L a$ of Marine Blade impellers tend to be slightly lower than that of impellers which employ both axial and radial mixing.



Marine blade Impeller

Pitched blade impellers for shear-sensitive microorganisms

The blades on this impeller are flat, and set at approximately 45° angles, producing both an axial and radial flow. The combination provides better overall mixing, and creates a higher oxygen mass transfer rate ($K_L a$) than that of unidirectional (axial or radial) flow impellers. Pitched Blade impellers are low shear impellers, designed to gently mix the contents of the culture without causing cell damage. They are most commonly used with mammalian, insect, or other shear-sensitive cell lines, growing either in suspension or with the aid of microcarriers. They are also widely used in fermentation processes dealing with highly viscous cultures, such as filamentous bacteria and fungi, as well as some biofuels processes.



Pitched Blade Impeller

Spin filter retention device for all cell lines

Spin filters are used to keep cells inside the vessel during continuous or perfusion culture. In New Brunswick bioreactors, spin filters with a low-shear Marine Blade impeller are offered for suspension and microcarrier applications. The Spin Filter Kit consists of a screened cage surrounding the impeller shaft, with very small filter pore openings that keep cells isolated outside the cage. Inside the rotating cage, a dip-tube is provided for continuous withdrawal of culture broth. A media feed tube is used outside the cage to provide a steady supply of fresh nutrients. Offered with 10 μm openings for suspension cultures and 75 μm openings for microcarrier cultures. Due to its gentle mixing nature, the spin filter is typically used with cell lines that are microcarrier-dependent or highly sensitive to shear. They are ideal for production of secreted proteins, as they keep the harvested media cell-free and thereby simplify purification.



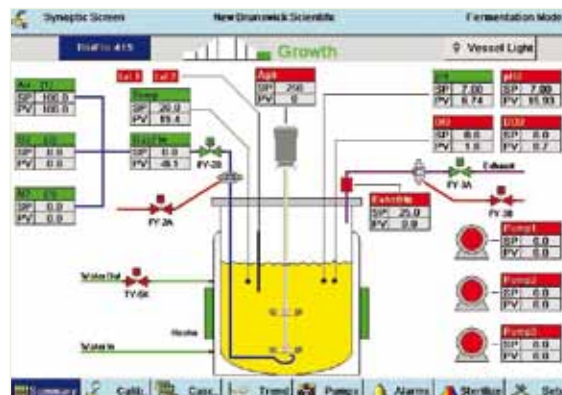
Spin Filter with
Marine Blade

Reactor Process Controller – BioFlo® and CeliGen® BLU, 115, 310, 415, 510 and 610

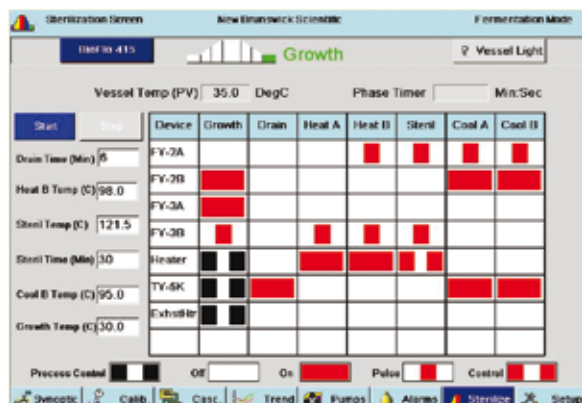
Reactor Process Controller (RPC) is an advanced controller used in most New Brunswick benchtop and pilot-plant fermentors and bioreactors. The advantages of a common control platform are easier scale-up, reduced learning curve, and uniformity among products. The RPC system uses a touchscreen interface to simplify setup, calibration and monitoring, and is capable of controlling up to 32 process loops per fermentor or bioreactor. When used in our BioFlo and CeliGen 310 systems, it enables simultaneous control of up to 4 vessels – and over 120 process loops – from a single controller. In the 115, it can simultaneously control up to 3 vessels – over 90 process loops.

Sample screens

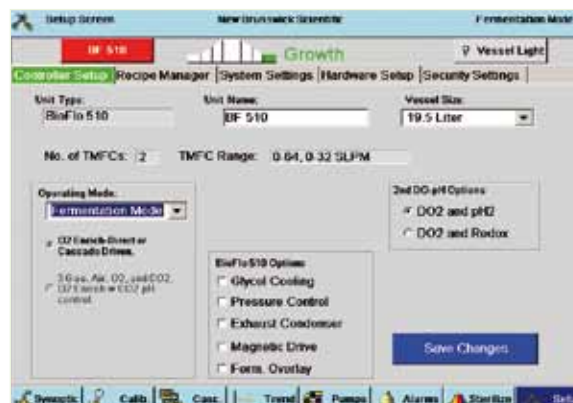
A variety of other screens are also provided for setting up and controlling pumps, alarms, cascade control strategies, and much more.



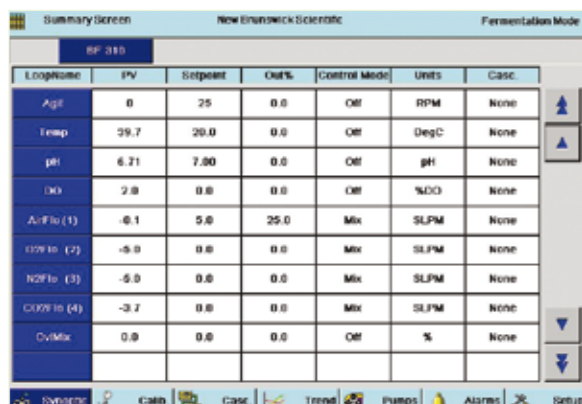
Synoptic View provides a pictorial alternative to the summary screen for viewing and editing process values.



Enter and view sterilization parameters and valve sequences from the Sterilization Screen (available only on sterilizable-in-place 415, 510 and 610 models).



The Setup Screen lets you easily configure your settings – Adjust gas flow options, change vessel size for more accurate PI values, save up to 10 recipes, add additional fermentors, and more.



Summary Screen lets you conveniently view setpoints, current values, cascade loops and more – for up to 10 parameters simultaneously. All 32 parameters can be viewed simply by scrolling up or down.



Trend graphing makes it simple to track and export data on up to eight process variables per reactor over a six day span. Customize the view by selecting the parameters, colors and interval between sample measurements.

BioFlo®/CelliGen® 115 fermentor/bioreactor, 1.3 – 14.0 liters

**System controllers and components**

1. **Control Station** (and optional utility stations for second and third vessel) include an integrated water manifold to save space. Footprint measures just 39.6 x 40.6 cm, W x D.
2. **Rotameters/TMFC** – each Control or Utility Station can accommodate up to four Rotameters – available in a variety of flow rates – or a Thermal Mass Flow Controller. (Two Rotameters shown).
3. **Color Touchscreen Interface**, 21.3 cm, is standard on Control Stations. (Not provided on supplemental utility stations.)
4. **Sample Assembly** – a syringe-activated device for removing media samples without contaminating the culture. The sampler installs in a headplate port. Samplers are sized to vessels.
5. **Heat-Blanketed Vessels** are available in four sizes. Shown with direct-drive motor.
6. **Three Fixed-Speed (12 RPM) Peristaltic Pumps** can be linked directly to acid, base, foam, level.
7. **Quick Connects for Water In/Out** allow utilities to be attached and detached in seconds.
8. **Connections for pH/DO, Sparge, Motor, Heater, Temperature Probe and Foam/Level** are easily accessed from the side.
9. **Optional Addition Bottle Holder** saves valuable lab space.
10. **Double-Wall Water-Jacketed Vessels** are available in four sizes. Shown with Magnetic Drive motor.
11. **Exhaust Condenser** – essential in most applications for keeping exhaust filters dry and vessel contents from evaporating during culture.

Description

The BioFlo/CelliGen 115 is an easy-to-use system, with built-in controls for operation as a microbial fermentor as well as mammalian/animal cell culture bioreactor. This versatility, coupled with its ability to control up to three independent reactors from a single control station, makes it ideally suited to use in R&D labs, universities, teaching facilities, testing labs, and more.

Product features

- **Applications:** Microbes, yeast, insect, plant or mammalian cells, in batch, fed-batch and continuous culture
- **Pre-configured kits:** Simplify ordering by choosing a pre-configured kit for basic or advanced fermentation or advanced cell culture. Kits include everything you need to get started, from vessel and control station to cable ties and tubing. See chart on page 96 for details, or custom-configure a system to your specifications by selecting from our wide range of options
- **Vessel:** Eight interchangeable, autoclavable, glass vessels are offered in 1.3, 3.0, 7.5 & 14.0 liter (total volume) capacities. Choose double-wall water-jacketed vessel with magnetic-drive motor, or heat-blanketed vessel with direct-drive motor
- **Impellers:** Rushton-type, pitched-blade and marine-blade impellers and spin-filter retention devices are offered. Basic and Advanced Fermentation Kits include 2 Rushton-type Impellers as standard; Cell Culture Kits include a pitched-blade impeller as standard. See page 92
- **Sophisticated control station:** Compact unit with powerful RPC (Reactor Process Controller) provides integrated control of process parameters, for up to 3 independent vessels. One control station or cost-saving utility station is required for operation of each vessel. Includes 3 integrated pumps; integrated water manifold; and 2 USB ports
- **Industrial touchscreen control interface:** Bright, easy-to-read, color display is built into the Control Station for system management and monitoring
- **Gas flow control:** Manual gas-flow control via one or two Rotameters is standard with pre-configured kits and automatic gas mixing comes standard with cell culture systems. Systems can be customized with up to 4 Rotameters, TMFC for automatic gas-flow control and automatic gas mixing via solenoids
- **Additional options:** pH & DO probes, addition bottle kit, start-up kit and much more. Related accessories, including BioCommand® SCADA Software, gas analyzers and more are described beginning on page 120

continued on next page

BioFlo®/CelliGen® 115 pre-configured kits contain everything you need to get started

Basic and Advanced Fermentation Kits, as well as Advanced Cell Culture Kits simplify ordering. If a pre-configured system doesn't meet your process requirements, a fully configurable system can be designed by selecting from our available options:

- pH/DO
- Automatic gas mixing
- Thermal Mass Flow Control (TMFC)
- Rotameters
- Pumps
- Foam/Level.

Need a second or third system? Budget-saving utility stations and "Add-A-Vessel Kits" take the cost and work out of ordering added units.

Do you already own a New Brunswick BioFlo 110 vessel? Save money by re-using your existing vessel. Retro Kits are also offered to convert your existing cable connections to fit the new system.

We've thought of everything, including offering "start-up kits" containing essential tubing connectors, cable ties, clamps and more – catalog number M1369-0300 – see page 100.

Contents of pre-configured kits

Kit Contents	Advanced Fermentation Kit	Advanced Cell Culture Kit	Basic Fermentation Kit
Vessel Kit – Basic*			●
Vessel Kit – Advanced*	●	●	
Master Control Station with Touchscreen	●	●	●
Temperature Control	●	●	●
Agitation Control	●	●	●
pH/DO Control	●	●	
Foam/Level Control	●	●	
3 Fixed-Speed Pumps	●	●	
Manual Gas Mix	●		●
Automatic Gas Mix via 4 Solenoids		●	
Manual Gas Flow via Rotameters (Qty. Rotameters shown)	2	1	1
Automatic Gas Flow (0-20 SLPM TMFC)**			

(*) For details of vessel kit components, see the Add-A-Vessel table on next page.
(**) Available in configured systems only.

Standard flow rates

Vessel Size (L)	Fermentation Kits SLPM	Cell Culture Kits SLPM
1.3	0.25 - 2.5	0.05 - 0.5
3.0	0.2 - 5.0	0.12 - 1.2
7.5	0.1 - 11.4	0.25 - 2.5
14.0	2.0 - 20.0	0.5 - 5.0



BioFlo/CelliGen 115 Controller with two Utility Stations

BioFlo®/CelliGen® 115 pre-configured kits (continued)

Contents of Add-A-Vessel kits

Vessel Kits contain most ancillary components required for independent operation as a second or third vessel.

Contents	Adv. Fermentation Vessel Kit		Adv. Cell Culture Vessel Kit		Basic Fermentation Vessel Kit	
	Heat Blanket	Water Jacket	Heat Blanket	Water Jacket	Heat Blanket	Water Jacket
Dish-Bottom Vessel with stainless steel headplate	●	●	●	●	●	●
Vessel Stand	●		●		●	
Agitation Motor, 50 - 1200 rpm (ferm. direct drive)	●	●			●	●
Agitation Motor, 25 - 200 rpm (cell cult. magnetic drive)			○	○		
Agitation Motor, 25 - 400 rpm (cell cult. direct drive)			○	○		
Heater Blanket	●		●		●	
Jacket Water Heater		●		●		●
Immersion Cooling Coil	●		●		●	
Thermowell & RTD Probe	●	●	●	●	●	●
pH/DO Probe Kit	●	●	●	●	○	○
Foam/Level Probe	●	●	●	●	○	○
Baffle Assembly	●	●			●	●
Rushton Impellers (two blades)	●	●	○	○	●	●
Pitched Blade Impeller (one blade)	○	○	●	●	○	○
Ring Sparger	●	●	●	●	●	●
Microsparge	○	○	○	○	○	○
Exhaust Condenser	●	●	●	●	○	○
Sampling Assembly	●	●	●	●	○	○
Tri-Port Adapter	●	●	●	●	○	○
Septum Kit	●	●	●	●	○	○
Liquid Addition Tube and Headplate Adapter	●	●	●	●	○	○
Two Addition Bottles and Tubing	●	●	●	●	○	○

● Standard ○ Optional

BioFlo 115 Advanced Fermentation kits — ordering information

Advanced Fermentation Kits are available with choice of voltage and heat-blanketed vessel (**HB**) or water-jacketed vessel (**WJ**).

Total Volume (L)	Working Volume (L)	Electrical Service	HB Kit		WJ Kit	
			Order no.		Order no.	
1.3	0.4 - 1.0	200 - 240 V	M1369-1151		M1369-1161	
3.0	0.8 - 2.2	200 - 240 V	M1369-1152		M1369-1162	
7.5	2.0 - 5.6	200 - 240 V	M1369-1155		M1369-1165	
14.0	4.0 - 10.5	200 - 240 V	M1369-1150		M1369-1160	
Add-A-Vessel Advanced Fermentation Kits*						
Available with choice of heat-blanketed vessel (HB) or water-jacketed vessel (WJ).						
1.3	0.4 - 1.0	—	M1369-1601		M1369-1611	
3.0	0.8 - 2.2	—	M1369-1602		M1369-1612	
7.5	2.0 - 5.6	—	M1369-1605		M1369-1615	
14.0	4.0 - 10.5	—	M1369-1610		M1369-1620	

(*) When ordering Add-a-Vessel Kits, a control station or utility station is required.

continued on next page

BioFlo®/CelliGen® 115 pre-configured kits (continued)

BioFlo 115 Basic Fermentation kits – ordering information

Advanced Fermentation Kits are available with choice of voltage and heat-blanketed vessel (**HB**) or water-jacketed vessel (**WJ**).

Total Volume (L)	Working Volume (L)	Electrical Service	HB Kit		WJ Kit	
			Order no.		Order no.	
1.3	0.4 - 1.0	200 - 240 V	M1369-1141		M1369-1631	
3.0	0.8 - 2.2	200 - 240 V	M1369-1142		M1369-1632	
7.5	2.0 - 5.6	200 - 240 V	M1369-1145		M1369-1635	
14.0	4.0 - 10.5	200 - 240 V	M1369-1140		M1369-1640	
Add-A-Vessel Basic Fermentation Kits* (BioFlo® 115)						
Available with choice of heat-blanketed vessel (HB) or water-jacketed vessel (WJ).						
1.3	0.4 - 1.0	—	M1369-1001		M1369-1011	
3.0	0.8 - 2.2	—	M1369-1002		M1369-1012	
7.5	2.0 - 5.6	—	M1369-1005		M1369-1015	
14.0	4.0 - 10.5	—	M1369-1010		M1369-1020	

(*) When ordering Add-a-Vessel Kits, a control station or utility station is required.

CelliGen 115 Advanced Cell Culture kits – ordering information

Advanced Cell Culture Kits are available with choice of voltage and heat-blanketed vessel (**HB**) or water-jacketed vessel (**WJ**) and choice of magnetic (**M**) or direct-drive (**D**) agitation systems.

Total Volume (L)	Working Volume (L)	Electrical Service	Agitation System	HB Kit		WJ Kit	
				Order no.		Order no.	
1.3	0.4 - 1.0	200 - 240 V	M D	M1369-1401 M1369-1501		M1369-1171 M1369-1371	
3.0	0.8 - 2.2	200 - 240 V	M D	M1369-1402 M1369-1502		M1369-1172 M1369-1372	
7.5	2.0 - 5.6	200 - 240 V	M D	M1369-1405 M1369-1505		M1369-1175 M1369-1375	
14.0	4.0 - 10.5	200 - 240 V	M D	M1369-1410 M1369-1510		M1369-1170 M1369-1370	
Add-A-Vessel Advanced Cell Culture Kits**							
Available with choice of heat-blanketed vessel (HB) or water-jacketed vessel (WJ).							
1.3	0.4 - 1.0	—	D	M1369-1041		M1369-1021	
3.0	0.8 - 2.2			M1369-1042		M1369-1022	
7.5	2.0 - 5.6			M1369-1045		M1369-1025	
14.0	4.0 - 10.5			M1369-1050		M1369-1030	
1.3	0.4 - 1.0	—	M	M1369-1051		M1369-1031	
3.0	0.8 - 2.2			M1369-1052		M1369-1032	
7.5	2.0 - 5.6			M1369-1055		M1369-1035	
14.0	4.0 - 10.5			M1369-1060		M1369-1040	

(**) When ordering Add-a-Vessel Kits, a control station or utility station is required.

BioFlo®/CelliGen® 115 – approximate vessel dimensions, as prepared for autoclave

Heat-blanketed vessels

Vessel Total Volume (L)	With Exhaust Condenser			Without Exhaust Condenser	
	Length	Width	Height	Diameter	Height
	cm	cm	cm	cm	cm
1.3 & 3.0	24	22	56	22	42
7.5	37	29	65	29	49.5
14.0	29	29	74	29	61
On Optional Slant Rack					
7.5	71	29	46	—	—
14.0	80	29	51	—	—

Water-jacketed vessels

Vessel Total Volume (L)	With Exhaust Condenser			Without Exhaust Condenser	
	Length	Width	Height	Diameter	Height
	cm	cm	cm	cm	cm
1.3	29	29	52	23.5	41
3.0	29	29	56.5	24	45
7.5	29	29	68	29	52
14.0	29	29	80	29	67
On Optional Slant Rack					
7.5	66	29	47	—	—
14.0	72	29	52	—	—

BioFlo®/CelliGen® 115 – accessories for fermentation and cell culture

Ordering information – accessories and replacement parts

Description	Order no.	
pH Probe Kits (Probe, Cable, Adapter)		
For 1.3 L Vessels	M1369-9970	
For 3.0 L Vessels	M1369-9977	
For 7.5 L Vessels	M1369-9982	
For 14.0 L Vessels	M1369-9985	
Replacement pH and DO Probe Cable/Adapter		
pH cable (all vessels)	P0720-2276	
DO cable (all vessels)	P0720-2336	
pH/DO probe adapter (12 mm compression)	M1273-5040	
DO Probe Kits (Probe, Cable, Adapter)		
For 1.3 L Vessels	M1369-9974	
For 3.0 L Vessels	M1369-9979	
For 7.5 L Vessels	M1369-9986	
For 14.0 L Vessels	M1369-9988	
Replacement Foam/Level Kits (Foam probe, Level probe, Cable, Adapters)		
For 1.3 L Vessels	M1369-9947	
For 3.0 L Vessels	M1369-9951	
For 7.5 L & 14.0 L Vessels	M1369-9960	

Ordering information – accessories and replacement parts

Description	Order no.	
Replacement Foam/Level Cable/Adapter		
Foam/Level cable (all vessels)	M1361-8014	
Foam/Level probe adapter (12 mm compression)	M1273-5042	
Replacement Motors		
Direct Drive, For 1.3 & 3.0 L Fermentors	M1369-3120	
Direct Drive, For 7.5 & 14.0 L Fermentors	M1369-3125	
Direct Drive, For All vessel sizes, Cell Culture	M1369-3135	
Magnetic Drive, For All vessel sizes	M1369-3130	
Replacement Heater Blankets		
For 1.3 L Vessels	M1369-8021	
For 3.0 L Vessels	M1369-8022	
For 7.5 L Vessels	M1369-8020	
For 14.0 L Vessels	M1369-8023	
Replacement Water Jacket Heaters		
For 1.3 & 3.0 L Vessels	M1369-3107	
For 7.5 & 14.0 L Vessels	M1369-3108	

continued on next page

BioFlo® / CelliGen® 115 – accessories for fermentation and cell culture (continued)

Ordering information – accessories and replacement parts

Description	Order no.	
Replacement Glass Vessels		
1.3 L Heat Blanket Vessel	M1273-9907	
3.0 L Heat Blanket Vessel	M1273-9909	
7.5 L Heat Blanket Vessel	M1273-9916	
14.0 L Heat Blanket Vessel	M1273-9918	
1.3 L Water Jacket Vessel	M1273-9908	
3.0 L Water Jacket Vessel	M1273-9915	
7.5 L Water Jacket Vessel	M1273-9917	
14.0 L Water Jacket Vessel	M1273-9919	
Replacement exhaust condensers		
For 1.3, 3.0 and 7.5 L Vessels	M1273-9945	
For 14.0 L Vessels	M1273-9957	
Headplate adapters & plugs		
Tri-port Adapter	M1273-9961	
pH/DO Probe Adapter (12 mm compression)	M1273-5040	
Foam/Level Probe Adapter (12 mm compression)	M1273-5042	
Septum Kit	M1273-3031	
6 mm Adapter kit, (6 mm port for 6 mm tube)	M1273-5054	
6 mm Single Addition Tube for 6 mm adapter	M1273-9575	
Adapter Kit, 12 mm port to 6 mm tube	M1273-5056	
Adapter Kit, 12 mm port to 12 mm tube	M1273-5058	
6.35 mm Port Plug	M1273-9405	
12 mm Port Plug	M1273-9406	
19 mm Port Plug	M1273-9407	
Replacement and spare parts kits		
Headplate Port Washers/O-Rings	M1273-9900	
Spare Parts Kit, 1.3 & 3.0 L HB Vessel	M1273-9991	
Spare Parts Kit, 7.5 & 14.0 L HB Vessel	M1273-9992	
Spare Parts Kit, 1.3 & 3.0 L WJ Vessel	M1273-9998	
Spare Parts Kit, 7.5 & 14.0 L WJ Vessel	M1273-9999	
Impellers		
Rushton Impeller, 1.3 & 3.0 L	M1273-9291	
Rushton Impeller, 7.5 L	M1273-9292	
Rushton Impeller, 14.0 L	M1273-9293	

Ordering information – accessories and replacement parts

Description	Order no.	
Pitched Blade, 1.3 & 3.0 L, Upflow	M1273-9206	
Pitched Blade, 7.5 & 14.0 L, Upflow	M1273-9207	
Pitched Blade, 1.3 & 3.0 L, Downflow	M1273-9290	
Pitched Blade, 7.5 & 14.0 L, Downflow	M1230-9212	
Marine Blade, 1.3, 3.0 L	M1273-9901	
Marine Blade, 7.5 & 14.0 L	M1273-9902	
Spin Filter Suspension Cells, 1.3 L	M1273-3201	
Spin Filter Suspension Cells, 3.0 L	M1273-3202	
Spin Filter Suspension Cells, 7.5 L	M1273-3205	
Spin Filter Suspension Cells, 14.0 L	M1273-3210	
Spin Filter Microcarriers, 1.3 L	M1273-3211	
Spin Filter Microcarriers, 3.0 L	M1273-3212	
Spin Filter Microcarriers, 7.5 L	M1273-3215	
Spin Filter Microcarriers, 14.0 L	M1273-3220	
Microspargers		
Sintered/Porous Microsparger, 1.3 L HB Vessel	M1273-5007	
Sintered/Porous Microsparger, 1.3 L WJ Vessel	M1273-5003	
Sintered/Porous Microsparger, 3.0 L	M1273-5004	
Sintered/Porous Microsparger, 7.5 L	M1273-5005	
Sintered/Porous Microsparger, 14.0 L	M1273-5006	
Sampling assemblies		
Sampling Assembly, 1.3 L	M1273-9946	
Sampling Assembly, 3.0 L	M1273-9949	
Sampling Assembly, 7.5 L	M1273-9953	
Sampling Assembly, 14.0 L	M1273-9956	
Rotameter kits		
0-20 SLPM Rotameter with stand & tubing	M1287-3520	
0-5 SLPM Rotameter with stand & tubing	M1287-3510	
Miscellaneous		
"Start-Up Kits" with tubing connectors, cable ties, clamps and more	M1369-0300	
Autoclave Rack for 7.5 and 14.0 L Vessels	M1273-9266	
Water Regulator Kit (4 manifolds)	M1273-5001	

BioFlo®/CelliGen® 115 – accessories for fermentation and cell culture (continued)

Ordering information – accessories and replacement parts

Description	Order no.	
Air Regulator Kit (4 manifolds)	M1273-5002	
Water Regulator/Filter Kit (for single system)	M1117-2040	
Air Regulator/Filter Kit (for single system)	M1230-3030	
Bearing Housing Cap (10 pack)	M1273-9936	
Addition Bottle Kit (250 mL)	M1273-9989	
Addition Bottle Kit (500 mL)	M1273-9990	
Addition Bottle Holder Kit	M1273-9940	
Silicone Grease for Seals/O-rings	P0860-1050	
Silicone Tubing Clamp	P0160-4460	
Polysulfone Quick-Connect (Female) 0.635 cm	P0240-2680	
Polysulfone Quick-Connect (Male) 0.635 cm	P0240-2670	

Vessel headplate ports

Vessel Size (L)	6 mm	12 mm	19 mm	Total Ports
1.3	1	9	0	10
3.0	6	7	0	13
7.5	7	8	1	16
14.0	7	8	1	16

BioFlo® 110 – replacement parts

Ordering information – accessories and replacement parts

Description	Order no.	
Jacket water heaters		
Jacket Water Heater, 1.3-3.0 L Vessels	M1273-3107	
Heater blankets		
For 1.3 L Vessels	M1273-9931	
For 3.0 L Vessels	M1273-9932	
For 7.5 L Vessels	M1273-9930	
For 14.0 L Vessels	M1273-9933	
Motors		
Direct Drive, Ferm., 1.3-3.0 L	M1273-3120	
Direct Drive, Ferm., 7.5-14.0 L	M1273-3125	
Direct Drive, Cell Culture, all vessels	M1273-3135	
Magnetic Drive, all vessels	M1273-3130	

Ordering information – accessories and replacement parts

Description	Order no.	
pH Probes		
1.3 L pH Probe	P0720-5582	
3.0 L pH Probe	P0720-5584	
7.5 L pH Probe	P0720-5580	
14.0 L pH Probe	P0720-5583	
pH Probe cable		
BioFlo® 110 pH Probe Cable (all sizes)	P0720-2095	
DO Probes		
1.3 L Direct or Magnetic Drive	P0720-6580	
3.0 L Direct or Magnetic Drive	P0720-6282	
7.5 L Direct or Magnetic Drive	P0720-6283	
14.0 L Direct or Magnetic Drive	P0720-6284	
DO Probe cable		
BioFlo® 110 DO Probe Cable (all sizes)	P0720-2331	

BioFlo® 310 compact autoclavable benchtop fermentor, 2.5–14.0 liters



Trend up to 144 hours of process data. Monitor and control it all on a large, 38.1 cm touchscreen interface

Description

BioFlo 310 is a validatable, benchtop, autoclavable fermentor with advanced controller and touchscreen interface capable of operating up to four reactors simultaneously.

Product features

- **Applications:** Bacteria, yeast or fungi, and with optional accessories can be adapted for mammalian, animal, insect or plant cells. For batch, fed-batch and continuous culture
- **Sophisticated control station:** Compact unit with powerful RPC (Reactor Process Controller) provides integrated control of up to 32 process parameters, trends up to 8 parameters, and stores 10 recipes, in each reactor, and includes built-in security features. See page 94. Includes large industrial touchscreen interface with adjustable-position, 38.1 cm (15 in) color display; 3 integrated pumps; control of agitation, temperature, pH, DO, foam/level, and 2-, 3- or 4-gas mixing; 2 USB ports; and 7 analog inputs and 7 outputs to add ancillary devices. Cost-saving utility stations are offered for operation of 2nd, 3rd and 4th vessel
- **Vessel:** Interchangeable, autoclavable vessels with unique heat exchanger enables rapid temperature removal after autoclaving and from exothermic cultures, and rapid rises for temperature inductions. Offered in 2.5, 5.0, 7.5 & 14.0 L (total volume) capacities.
- **Impellers:** 2 Rushton-type impellers standard. Pitched-blade and marine-blade, optional. See page 92
- **Gas flow control:** Sparge gas with 1 TMFC and 4 solenoid valves is standard. Or custom configure up to 4 TMFCs with choice of various flow rates, or Rotameter. Gas overlay available
- **Additional options:** pH & DO probe kits, 2nd DO - pH / Redox sensor, scales, validation packages, and more shown on next page. Related accessories, including BioCommand® SCADA Software, gas analyzers, and more are described beginning on page 120

Ordering information – pre-configured kits

System Includes	Electrical Service	Total Volume (L)	Working Volume (L)	Order no.	
Master Control Station with Touchscreen Display, 1 TMFC (0.4-20 SLPM) Automatic Gas Mixing, Vessel Assembly* with Direct Drive Motor, pH/DO Probe Kit, and Sample Assembly	200-240V, 50/60 Hz	2.5	0.75-1.75	M1287-1174	⚡
		5.0	1.25-3.75	M1287-1175	⚡
		7.5	2.0-5.5	M1287-1176	⚡
		14.0	3.0-10.5	M1287-1177	⚡

(*) Vessel assembly includes glass vessel with stainless-steel headplate and dished-jacketed bottom, exhaust condenser, sampling assembly, two 6-blade Rushton-type impellers, foam/level sensor, direct drive motor, and more.

⚡ **Ordering information for other voltage options begins on page 144.**

BioFlo® 310 – ordering custom configurations

To order a BioFlo® 310 with multiple Thermal Mass Flow Controllers (TMFCs) with various ranges, and/or 2nd, 3rd and 4th Utility Station, and/or 2nd DO - pH/Redox sensors:

1. Choose voltage:

- 200 - 240 V _____ M1287-1020

2. Choose cabinet:

(One Control Station or Utility Station is required for operation of each vessel.)

- Master Control Station _____ M1287-2110
- Utility Station with no display _____ M1287-2112

3. Choose gases:

- 0 TMFC* (requires a Rotameter)*** _____ M1287-2010
- 1 Rotameter (0 - 20 SLPM**) _____ M1287-3510
- 1 Rotameter (0 - 5 SLPM) _____ M1287-3520
- 1 TMFC (0.4 - 20 SLPM)*** _____ M1287-2012
- 1 TMFC (0.1 - 5 SLPM)*** _____ M1287-2011
- 2 TMFC (0.1 - 5 SLPM) _____ M1287-2013
- 2 TMFC (0.4 - 20 SLPM) _____ M1287-2014
- 3 TMFC (0.4 - 20 SLPM) _____ M1287-2016
- 4 TMFC (0.1 - 5 SLPM) _____ M1287-2017
- 4 TMFC (0.4 - 20 SLPM) _____ M1287-2018

3a. When should you select multiple TMFCs?

When you require each gas to be individually controlled, monitored and displayed in SLPM.

3b. Which TMFC is right for your process?

For fermentation we recommend 0.4 - 20 SLPM and 0.1 - 5 SLPM for smaller size vessels or multiple TMFCs.

(*) TMFC = Thermal Mass Flow Controller

(**) SLPM = Standard Liters Per Minute

(***) 0 and 1 TMFCs are built with 4-gas manifold for 4 gas mixing

4. Add vessel kits:

Vessel Total Volume (L)	With Motor	Without Motor
	Order no.	Order no.
2.5	M1287-0300	M1287-0320
5.0	M1287-0301	M1287-0321
7.5	M1287-0302	M1287-0322
14.0	M1287-0303	M1287-0323

5. Add 2nd DO - pH/Redox board, optional:

- Factory installed _____ M1287-3540

6. Add probe kits which include probe and cable:

pH/DO Probe Kits

- 2.5 L _____ M1287-0400
- 5.0 L _____ M1287-0401
- 7.5 L _____ M1287-0402
- 14.0 L _____ M1287-0403

Redox Probe Kits

- 2.5 L _____ M1287-0410
- 5.0 L _____ M1287-0411
- 7.5 L _____ M1287-0412
- 14.0 L _____ M1287-0413

7. Add options and accessories:

see page 104 and related accessories beginning on page 120.

Upgrade your existing BioFlo 3000 vessel or existing cabinet to a BioFlo 310. You can gain the power of the advanced BioFlo 310 controller while saving money by re-using your existing vessels/controller.

How to order:

To use your existing BioFlo 3000 vessel with a BioFlo 310 cabinet:

- Choose Cabinet:** (Includes Master Control Station with 1 TMFC, 0.4 - 20 SLPM – complete Fermentation cabinet)
 - 230 V Master Control Station _____ M1287-1005
- Choose Motor Conversion Kits:** (Includes new motor, cables and tubing)
 - For BioFlo 3000 Vessels, 1 & 3 L _____ M1287-1200
 - For BioFlo 3000 Vessels, 6 L _____ M1287-1201
 - For BioFlo 3000 Vessels, 14 L _____ M1287-1202

To use your existing BioFlo 3000 cabinet with a BioFlo 310 vessel:

- BioFlo 310 Retro Kit** (Includes vessel assembly, vessel kit, tubing kit and motor)
 - For BioFlo 310 Vessels, 2.5 L _____ M1287-1205
 - For BioFlo 310 Vessels, 5.0 L _____ M1287-1206
 - For BioFlo 310 Vessels, 7.5 L _____ M1287-1207
 - For BioFlo 310 Vessels, 14.0 L _____ M1287-1208

BioFlo® 310 – options and accessories

Ordering information

Description	Order no.	
Cell culture conversion kit/gas overlay		
Microbial to Cell Culture Conversion Kit adapts the BioFlo 310 fermentor to enable high performance growth of mammalian, insect or plant cells using a CelliGen Plus or CelliGen 310 vessel. Includes a TMFC with 4 gas mix which plugs into your BioFlo 310 cabinet, reducing the flow rate from 0-20 SLPM to 0-5 SLPM. Enables dual control for sparge and gas overlay. For Information on Cell Culture Vessels see pages 105–110.	M1287-3501	
2nd DO-pH/Redox options		
2nd DO-pH/Redox Controller (Field Installed)	M1287-3530	
Replacement glass vessels		
Replacement Vessel, 2.5 L	M1287-9930	
Replacement Vessel, 5.0 L	M1287-9931	
Replacement Vessel, 7.5 L	M1287-9932	
Replacement Vessel, 14.0 L	M1287-9933	
Validation kits		
Basic Validation	M1287-0101	
Basic Plus Validation	M1287-0102	
Optional autoclave rack		
Angled Autoclave Rack	XMF-8624	
Angled Autoclave Rack, low profile for 14 L vessels	M1227-9231	
Additional options		
RS-232 8-Port (Serial) Controller (required when connecting scales)	M1287-0020	
Mettler Toledo Scale Display (required with each of the following scales)	P0440-4489	

Ordering information

Description	Order no.	
Mettler Toledo Scale, 15 kg	P0440-4325	
Mettler Toledo Scale, 32 kg	P0440-4321	
Mettler Toledo Scale, 60 kg	P0440-4326	
Mettler Toledo Scale, 150 kg	P0440-4327	
Water Regulator/Filter Kit (4 Manifolds)	M1273-5001	
Air Regulator/Filter Kit (4 Manifolds)	M1273-5002	
Sampling Assembly (included in fermentation vessel kits)	M1287-5042	
Optional Sampling Assembly adapter (used with Corning 15 ml or BD Falcon 50 ml disposable vials)	M1287-9964	
Septum Adapter Kit (Includes 10 Septa)	M1287-5031	
Probe Adapter Kit (12 mm compression)	M1287-5030	
6 mm Adapter Kit (Holds 0.635 cm Tube)	M1287-5034	
User's Kit for 2.5, 5.0 and 7.5 L – Includes tubing, clamps, filters, connectors, addition vessels and other commonly required items	M1287-9914	
User's Kit for 14 L, same as above	M1287-9915	
Addition Bottle Kit, 250 mL	M1273-9989	
Addition Bottle Kit, 500 mL	M1273-9990	
Tri-Port Addition Kit	M1287-9212	
Single Addition Kit	M1287-5043	
Spare Parts Kit, 2.5 L	M1287-6020	
Spare Parts Kit, 5.0 L	M1287-6021	
Spare Parts Kit, 7.5 L	M1287-6022	
Spare Parts Kit, 14.0 L	M1287-6023	

BioFlo®/CelliGen® 310 – vessel dimensions and ports



Up to four reactors can be controlled with a single Control Station

Vessel dimensions – BioFlo / CelliGen 310

Vessel Dimensions With Exhaust Condenser					
Vessel Total Volume (L)	BioFlo 310		CelliGen 310		
	Length & Width cm	Height cm	Length cm	Width cm	Height cm
2.5	20.3	53.3	20.3	21.6	55.9
5.0	24.1	61.0	24.1	24.1	63.5
7.5	26.7	63.5	27.9	27.9	66.0
14.0	29.9	71.1	32.4	32.4	73.7

Autoclave Dimensions – BioFlo / CelliGen 310

Recommended Autoclave Dimensions – BioFlo/CelliGen 310				
Order no.	Vessel Size (L)	Max Length Rack Mounted	Max Width Rack Mounted	Max Height Rack Mounted
XMF-8624 Autoclave Rack	2.5	66 cm	27.4 cm	45.7 cm
	5.0	66 cm	27.4 cm	52 cm
	7.5	66 cm	27.4 cm	55.3 cm
	14.0	68.5 cm	35.5 cm	57 cm
M1227-9231 Autoclave Rack, Low Profile	For CelliGen 310			
	14.0	76.2 cm	33 cm	45.7 cm
	For BioFlo 310			
	14.0	73.6 cm	35.5 cm	50.8 cm

Vessel headplate ports – BioFlo / CelliGen 310

Vessel Size (L)	6 mm	PG 13.5	19 mm	Total Ports
2.5	1	9	0	10
5.0	3	10	1	14
7.5	3	12	1	16
14.0	3	12	1	16

CelliGen® 310 autoclavable stirred-tank/packed-bed bioreactor, 2.5–14 liters



Trends 8 loops and up to 144 hours of process data.

Description

CelliGen 310 is a validatable, benchtop, autoclavable bioreactor with advanced controller and touchscreen interface capable of operating up to four reactors simultaneously.

Product features

- **Applications:** Mammalian, animal, insect or plant cells, in batch, fed-batch and continuous culture.
- **Sophisticated control station:** Compact unit with powerful RPC (Reactor Process Controller) provides integrated control of up to 32 process parameters, trends up to 8 parameters, and stores 10 recipes, in each reactor, and includes built-in security features. (See page 94.) Includes large industrial touchscreen interface with adjustable-position, 38.1 cm (15 in) color display; 3 integrated pumps; control of agitation, temperature, pH, DO, foam/level, and 2-, 3-, or 4-gas mixing; 2 USB ports; and 7 analog inputs and 7 outputs to add ancillary devices. Cost-saving utility stations are offered for operation of 2nd, 3rd and 4th vessel
- **Vessel:** Interchangeable, double-walled glass, water-jacketed, autoclavable vessels, offered in 2.5, 5.0, 7.5 & 14.0 L (total volume) capacities
- **Impellers:** Choice of 5 types, including low-shear Cell Lift impeller for microcarriers, packed-bed basket for high yields of secreted products, pitched blade, marine blade, and spin-filter. See page 92
- **Gas flow control:** Sparge gas with 1 TMFC* (0.1 - 5 SLPM**) and 4 solenoid valves is standard. Or custom-configure up to 4 TMFCs with choice of various flow rates, or Rotameter. Gas overlay with TMFC or Rotameter, optional
- **Additional options:** pH & DO probe kits, 2nd DO - pH / Redox sensor, scales, validation packages, and more listed on next page. Related accessories, including BioCommand® SCADA Software, gas analyzers, and more are described beginning on page 120

Ordering information – pre-configured kits

Impeller and probe kits must be ordered separately.

System Includes***	Electrical Service	Total Volume (L)	Working Volume (L)	Order no.	
Master Control Station, 1 TMFC (0.1 - 5 SLPM) with 4-Gas Mixing, Touchscreen Display, Magnetic-Drive Motor & Vessel Kit ◊	200 - 240 V, 50/60 Hz	2.5	0.6 - 1.4	M1287-1264	⚡
		5.0	1.2 - 3.5	M1287-1265	⚡
		7.5	1.5 - 5.0	M1287-1266	⚡
		14.0	3.5 - 10.0	M1287-1267	⚡

(*) TMFC = Thermal Mass Flow Controller (**) SLPM = Standard Liters Per Minute (***) Impeller Kit and Probe Kit selections must additionally be specified. See Probe Kits on next page and Impeller Kits on page 108. Note: CelliGen 310 & CelliGen BLU Control Stations are not interchangeable. (◊) Vessel Kit includes water-jacketed glass vessel with stainless-steel headplate, exhaust condenser, foam/level sensor and more.

⚡ **Ordering information for other voltage options begins on page 144.**

CelliGen® 310 – ordering custom configurations

To order a CelliGen 310 with multiple Thermal Mass Flow Controllers (TMFCs) with various ranges, and/or 2nd, 3rd and 4th Utility Station, and/or 2nd DO - pH/Redox sensors:

1. Choose voltage:

- 200 - 240 V _____ M1287-1020

2. Choose cabinet: (see description on page 106)

(One Control Station or Utility Station is required for operation of each vessel.)

- Control Station _____ M1287-2110
- Utility Station with no display _____ M1287-2112

3. Choose gases:

- 0 TMFC* (requires a Rotameter)*** _____ M1287-2010
- 1 Rotameter (0 - 20 SLPM**) _____ M1287-3510
- 1 Rotameter (0 - 5 SLPM) _____ M1287-3520
- 1 TMFC (0.4 - 20 SLPM)*** _____ M1287-2012
- 1 TMFC (0 - 1 SLPM)*** _____ M1287-2019
- 1 TMFC (0.1 - 5 SLPM)*** _____ M1287-2011
- 2 TMFC (0.1 - 5 SLPM) _____ M1287-2013
- 2 TMFC (0.4 - 20 SLPM) _____ M1287-2014
- 3 TMFC (0.1 - 5 SLPM) _____ M1287-2015
- 3 TMFC (0.4 - 20 SLPM) _____ M1287-2016
- 4 TMFC (0 - 0.5 SLPM) _____ M1287-2021
- 4 TMFC (0 - 1 SLPM) _____ M1287-2020
- 4 TMFC (0.1 - 5 SLPM) _____ M1287-2017
- 4 TMFC (0.4 - 20 SLPM) _____ M1287-2018

(*) TMFC = Thermal Mass Flow Controller

(**) SLPM = Standard Liters per Minute

(***) 0 and 1 TMFCs are built with 4-gas manifold for 4 gas mixing

3a. What gas flow rate is right for your impeller?

In Cell Culture Process – Refer to chart below. Gas flow values may vary depending on your requirement. All gases combined should add up to the total gas range desired.

4. Add vessel kits¹:

Vessel Total Volume (L)	With Motor	Without Motor
	Order no.	Order no.
2.5	M1287-0310	M1287-0330
5.0	M1287-0311	M1287-0331
7.5	M1287-0312	M1287-0332
14.0	M1287-0313	M1287-0333

(¹) For Vessel Dimensions see page 105.

5. Select impeller kit (see page 92).

6. Add 2nd DO - pH/Redox board, optional:

- Factory installed _____ M1287-3540

7. Select pH/DO probe kit which include probe and cable:

For all Impellers except Packed-Bed Basket:

- M1287-0400 _____ 2.5 L
- M1287-0401 _____ 5.0 L
- M1287-0402 _____ 7.5 L
- M1287-0403 _____ 14.0 L

For Packed-Bed Basket Impellers Only:

- M1287-0674 _____ 2.5/5.0 L
- M1287-0675 _____ 7.5 L
- M1287-0676 _____ 14.0 L

8. Add Fibra-Cel® disks, if using packed-bed basket impeller:

- M1292-9984 _____ 50 grams
- M1292-9988 _____ 250 grams

Typical Quantity of Fibra-Cel Used:

2.5 L Vessel	50 Grams
5.0 L Vessel	150 Grams
7.5 L Vessel	250 Grams
14.0 L Vessel	500 Grams



Up to four reactors can be controlled with a single Control Station.

Gas Flow recommendations [SLPM] when using different impellers and vessel sizes in CelliGen 310

Impellers	Total Volume: 2.5 L	Total Volume: 5.0 L	Total Volume: 7.5 L	Total Volume: 14.0 L
Packed-Bed Basket ²	0 - 0.1	0 - 0.15	0 - 0.2	0 - 0.3
Pitched / Marine Blade	0 - 0.3	0 - 0.5	0 - 0.5	0 - 0.7
Spin Filter	0 - 0.5	0 - 0.5	0 - 0.5	0 - 1.0
Cell Lift ²	0 - 1.0	0 - 1.5	0 - 2.5	0 - 5.0

(²) When using a Cell Lift or Basket impeller, the minimum and maximum working volume is always the maximum volume shown for that vessel size.

CelliGen® 310 – ordering (continued)

Upgrade your existing CelliGen Plus vessel or existing cabinet to a CelliGen 310. You can gain the power of the advanced CelliGen 310 controller while saving money by re-using your existing vessels/controller.

How to Order:

To use a CelliGen 310 cabinet with a your existing CelliGen Plus vessel:

1. Choose cabinet: (Includes Master Control Station with 1 TMFC, 0.1 - 5 SLPM – complete Cell Culture cabinet)

- 230 V Master Control Station ————— M1287-1004

2. Choose motor conversion kits: (Includes new motor, cables and tubing)

- For CelliGen Plus Vessels, 2.2 & 5 L ————— M1287-1203
- For CelliGen Plus Vessels, 7 & 14 L ————— M1287-1204

To use your existing CelliGen Plus cabinet with a new CelliGen 310 vessel:

1. CelliGen 310 Retro Kit (Includes vessel assembly, vessel kit, tubing and motor)

- For CelliGen 310 Vessels, 2.5 L ————— M1287-1210
- For CelliGen 310 Vessels, 5.0 L ————— M1287-1211
- For CelliGen 310 Vessels, 7.5 L ————— M1287-1212
- For CelliGen 310 Vessels, 14.0 L ————— M1287-1213

Impellers

See article on page 92 for more information.

Basket Impeller with Fibra-Cel® Disks 	Basket Impeller 	Low-shear Cell Lift 	Marine Blade 	Spin Filter with Marine Blade 	Pitched Blade 
For high yields of secreted products from suspension or anchorage-dependent cells. Perfusion only. Also for processes using viral infections, BEVS and gene therapy. Cells are immobilized on Fibra-Cel disks and no special cell retention devices are required.	For traditional vaccines as well as gene therapy processes using microcarriers, batch or perfusion. Perfusion requires a cell retention device such as a decanting column. Also for processes using viral infections. High $K_L a$.	For suspension cells in batch, fed-batch, or perfusion. In perfusion a cell retention device is required. Also for processes using viral infections.	For suspension (10 μ screen) and for microcarriers (75 μ screen). Dip tube inside Spin Filter harvests cell-free medium. Perfusion only.	For insect and other suspension cells as well as microcarriers in batch, fed-batch or perfusion. A cell retention device is required in perfusion. Also for processes using viral infections.	

CelliGen® 310 – options and accessories

Ordering information

Description	Order no.	
Gas Overlay		
Gas Overlay with TMFC (0.1 - 5 SLPM)	M1287-3500	
Gas Overlay without TMFC (requires Rotameter)	M1287-3550	
Gas Overlay Vessel Kit (includes stainless steel tube & adapter, filter and silicone tubing)	M1287-3505*	
Scales		
RS-232 8-Port (Serial) Controller (required when connecting 1-8 scales to CelliGen® 310)	M1287-0020	
Mettler Toledo Scale Display (required with each of the scales below)	P0440-4489	
Mettler Toledo Scale, 15 kg	P0440-4325	
Mettler Toledo Scale, 32 kg	P0440-4321	
Mettler Toledo Scale, 60 kg	P0440-4326	
Mettler Toledo Scale, 150 kg	P0440-4327	
Replacement glass vessels		
2.5 L Glass Vessel	M1287-9920	
5.0 L Glass Vessel	M1287-9921	
7.5 L Glass Vessel	M1287-9922	
14.0 L Glass Vessel	M1287-9923	
Additional options		
Water Regulator/Filter Kit (4 Manifolds)	M1273-5001	
Air Regulator/Filter Kit (4 Manifolds)	M1273-5002	
Sampling Assembly, used with cell lift impeller	M1287-5042	
2.5 L Decanter Assembly, used with cell lift impeller	M1287-1190	
5.0 L Decanter Assembly, used with cell lift impeller	M1287-1191	
7.5 L Decanter Assembly, used with cell lift impeller	M1287-1192	
14.0 L Decanter Assembly, used with cell lift impeller	M1287-1193	
Validation kits		
Basic Validation	M1287-0111	
Basic Plus Validation	M1287-0114	

(*) Recommended when purchasing overlay.

(**) Includes dip tube.

Ordering information

Description	Order no.	
2nd DO-pH/Redox options		
2nd DO-pH/Redox Controller (Field Installed)	M1287-3530	
Impeller kits (includes shaft, impeller & sparger)		
2.5 L Cell Lift Impeller Kit for microcarriers (80 µm)	M1287-1110	
5.0 L Cell Lift Impeller Kit for microcarriers (80 µm)	M1287-1111	
7.5 L Cell Lift Impeller Kit for microcarriers (80 µm)	M1287-1112	
14.0 L Cell Lift Impeller Kit for microcarriers (80 µm)	M1287-1113	
Air Wash Kit for increasing oxygen transfer rate (used with Cell Lift only)	M1287-1150	
2.5 L Marine Blade Impeller Kit for suspension cells	M1287-5072	
5.0 L Marine Blade Impeller Kit	M1287-5073	
7.5 L Marine Blade Impeller Kit	M1287-5074	
14.0 L Marine Blade Impeller Kit	M1287-5075	
2.5 L Pitched Blade Impeller Kit for suspension cells	M1287-5068	
5.0 L Pitched Blade Impeller Kit	M1287-5069	
7.5 L Pitched Blade Impeller Kit	M1287-5070	
14.0 L Pitched Blade Impeller Kit	M1287-5071	
2.5 L Basket Impeller Kit for secreted proteins – need to order Fibra-Cel® separately	M1287-1140	
5.0 L Basket Impeller Kit	M1287-1141	
7.5 L Basket Impeller Kit	M1287-1142	
14.0 L Basket Impeller Kit	M1287-1143	
2.5 L Spin Filter Impeller Kit – for suspension cells (10 µm)	M1287-1125**	
5.0 L Spin Filter Impeller Kit (10 µm)	M1287-1126**	
7.5 L Spin Filter Impeller Kit (10 µm)	M1287-1127**	
14.0 L Spin Filter Impeller Kit (10 µm)	M1287-1128**	
2.5 L Spin Filter Impeller Kit – for microcarriers (75 µm)	M1287-1135**	
5.0 L Spin Filter Impeller Kit (75 µm)	M1287-1136**	
7.5 L Spin Filter Impeller Kit (75 µm)	M1287-1137**	

continued on next page

CelliGen® 310 – options and accessories (continued)

Ordering information

Description	Order no.	
Impeller kits (includes shaft, impeller & sparger)		
14.0 L Spin Filter Impeller Kit (75 µm)	M1287-1138**	
Impeller only		
2.5 L Pitched Blade Impeller only, Right-hand	M1287-9227	
5.0 L Pitched Blade impeller only, Right-hand	M1287-9228	
7.5 L Pitched Blade impeller only, Right-hand	M1287-9229	
14.0 L Pitched Blade impeller only, Right-hand	M1287-9230	
2.5 L Pitched Blade impeller only, Left-hand	M1287-9287	
5.0 L Pitched Blade impeller only, Left-hand	M1287-9288	
7.5 L Pitched Blade impeller only, Left-hand	M1287-9289	
14.0 L Pitched Blade impeller only, Left-hand	M1287-9290	
2.5 & 5.0 L Marine Blade Impeller only, Right-hand pitch (directs flow up).	M1287-9950	
7.5 L Marine Blade Impeller only, Right-hand pitch (directs flow up).	M1287-9952	
14.0 L Marine Blade Impeller only, Right-hand pitch (directs flow up).	M1287-9954	
2.5 & 5.0 L Marine Blade Impeller only, Left-hand pitch (directs flow down).	M1287-9951	
7.5 L Marine Blade Impeller only, Left-hand pitch (directs flow down).	M1287-9953	
14.0 L Marine Blade Impeller only, Left-hand pitch (directs flow down).	M1287-9955	

(**) Includes dip tube.

Ordering information

Description	Order no.	
Microspargers, 5 micron		
2.5 L Microsparger	M1287-5010	
5.0 L Microsparger	M1287-5011	
7.5 L Microsparger	M1287-5012	
14.0 L Microsparger	M1287-5013	
Replacement screen & O-ring kit for cell lift impeller		
For 2.5 L vessel	M1287-9985	
For 5 L vessel	M1287-9986	
For 7.5 L vessel	M1287-9987	
For 14.0 L vessel	M1287-9988	
Perfusion kits		
2.5 L Perfusion Kit	M1287-1185	
5.0 L Perfusion Kit	M1287-1186	
7.5 L Perfusion Kit	M1287-1187	
14.0 L Perfusion Kit	M1287-1188	
Spare parts kits		
For 2.5 L Vessels	M1287-6030	
For 5.0 L Vessels	M1287-6031	
For 7.5 L Vessels	M1287-6032	
For 14.0 L Vessels	M1287-6033	

BioFlo® 415 sterilizable-in-place benchtop fermentor for R&D, 7 - 19.5 liters



No autoclave or steam generator needed to autoclave vessels

Description

BioFlo 415 is a compact, validatable lab fermentor which uniquely uses a built-in electric heater and utilizes your water supply to automatically achieve sterilization on your lab bench without the need for an external steam source.

Product features

- **Applications:** Bacteria, yeast or fungi, in batch, fed-batch or continuous culture.
- **Sophisticated control station:** Compact unit with powerful RPC (Reactor Process Controller) provides integrated control of up to 32 process parameters, trends up to 8 parameters simultaneously, stores up to 10 recipes, and includes built-in security features. (See page 94.) Includes large industrial touchscreen interface with adjustable-position, 38.1 cm (15 in) color display; 3 integrated pumps; control of agitation, temperature, pH, DO, foam/level, and up to 4-gas mixing; 2 USB ports; and 7 analog inputs and 7 outputs to add ancillary devices
- **Vessel:** Interchangeable, stainless-steel, sterilizable-in-place vessels offered in 7.0 & 14.0 liter capacities with 2:1 aspect ratio, and 19.5 liter capacity with 3:1 ratio. Vessel assembly includes top magnetic-drive motor, exhaust condenser and sparger assembly with SIP filters, foam/level probe kits, drain valve and more
- **Impellers:** 7.0 and 14.0 L vessel include 2 Rushton-type impellers. 19.5 L vessel includes 3 Rushton-type impellers. Pitched-blade and marine-blade, optional
- **Gas flow control:** Thermal Mass Flow Controller (0.5 - 25 SLPM)* with 4 solenoid valves for gas mixing is standard. Replace the TMFC with a low-cost Rotameter, or upgrade by adding up to 4 TMFCs
- **Additional options:** Single or redundant pH, DO & Redox Kits; sampling assembly; scales; validation packages, and more listed on next page. Related accessories, including BioCommand® SCADA Software, gas analyzers, and more are described beginning on page 120

Pre-configured systems

System Includes	Electrical Service	Total Volume (L)	Working Volume (L)	Order no.	
BioFlo 415 Control Station, 1 TMFC (0.5 – 25 SLPM) with 4-Gas Mixing, Touchscreen Display and Vessel Assembly Kit. Call for Detailed Quotation	100 - 240 V, 50/60 Hz	7.0	2.0 - 5.0	M1360-1120	⚡
		14.0	4.0 - 10.0	M1360-1121	⚡
		19.5	5.0 - 15.5	M1360-1123	⚡

(*) SLPM = Standard Liters Per Minute.

⚡ **Ordering information for other voltage options begins on page 144.**

BioFlo® 415 – ordering information

1. Specify pre-configured kit from chart on the previous page dependent on your vessel size.

2. Select any of the highly recommended options from the list below. (Not included in the pre-configured kits.)

- Probe kits (pH, DO, Redox kits include probes and cables)
- Baffle Plug Kit and Pitched or Marine Blade (required for cell culture process)
- Needles and QMI 7-port Septum Kit
- Sample Assembly

3. For a different configuration than listed above, including multiple TMFCs with various ranges and/or 2nd DO- pH/ Redox sensor:

Select Gases from list below:

- 0 TMFC** (requires a Rotameter)*** ————— M1360-2030
- 3 TMFC (0.5 - 25 SLPM*) ————— M1360-2036
- 1 TMFC (0.1 - 5 SLPM)*** ————— M1360-2031
- 4 TMFC (0 - 0.5 SLPM) ————— M1360-2041
- 1 TMFC (0.5 - 25 SLPM)*** ————— M1360-2032
- 4 TMFC (0 - 1.0 SLPM) ————— M1360-2040
- 2 TMFC (0.1 - 5 SLPM) ————— M1360-2033
- 4 TMFC (0.1 - 5 SLPM) ————— M1360-2037
- 2 TMFC (0.5 - 25 SLPM) ————— M1360-2034
- 4 TMFC (0.5 - 25 SLPM) ————— M1360-2038
- 3 TMFC (0.1 - 5 SLPM) ————— M1360-2035

4. To upgrade your existing BioFlo 410 to a BioFlo 415:

Choose cabinet M1360-1005.

Bioflo 415 options & accessories*1

Description	Order no.	
Spare vessel assembly kits (include components listed in "Vessel Assembly" description on page 111.)		
7.0 L System with Magnetic Drive	M1360-2020	
14.0 L System with Magnetic Drive	M1360-2021	
19.5 L System with Magnetic Drive	M1360-2023	
Fluidine Tank Bottom Drain/ Harvest Valve	M1360-2050	
Probe kits: 7.0 liter systems		
pH probe, Mettler Ingold Gel Filled	M1294-9820	
DO probe, Mettler Ingold	M1294-9822	
Redox probe, Hamilton Gel Filled	M1360-9832	
Probe kits: 14.0 liter systems		
pH probe, Mettler Ingold Gel Filled	M1294-9824	
DO probe, Mettler Ingold	M1294-9826	
Redox probe, Hamilton Gel Filled	M1360-9834	
Probe kits: 19.5 liter systems		
pH probe, Hamilton Gel Filled	M1294-9828	
D.O. probe, Hamilton	M1294-9830	
Redox probe, Hamilton Gel Filled	M1360-9836	
Impellers		
Pitched Blade Impeller (up flow), 7.0 L	M1273-9206	
Pitched Blade Impeller (up flow), 14.0 L	M1294-9940	
Pitched Blade Impeller (up flow), 19.5 L	M1294-9942	
Pitched Blade Impeller (down flow), 7.0 L	M1273-9290	

Bioflo 415 options & accessories*1

Description	Order no.	
Impellers (continued)		
Pitched Blade Impeller (down flow), 14.0 L	M1294-9941	
Pitched Blade Impeller (down flow), 19.5 L	M1294-9943	
Marine Blade Impeller, 7.0 L	M1294-9948	
Marine Blade Impeller, 14.0 L	M1294-9944	
Marine Blade Impeller, 19.5 L	M1294-9945	
Additional options		
QMI 7-Port Septum Kit (19 mm port)	M1294-5023	
DO Probe Membrane Replacement Kit	P0720-6570	
PG 13.5 Probe-Adapter for 19 mm port	M1294-9544	
19 mm Probe-Adapter for 19 mm port	M1294-9542	
Water Regulator/Filter Kit (4 Manifolds)	M1273-5001	
Air Regulator/Filter Kit (4 Manifolds)	M1273-5002	
Needle (Pack of 100) 18 Gauge 3.8 cm Length (used for multiple septum ports)	P0440-0064	
Baffle Plug Kit (New vessel headplate)	M1294-9954	
Basic Validation	M1360-0101	
Basic Plus Validation	M1360-0102	
Enhanced Validation	M1360-0103	
Sampling Assembly	M1294-5013	
Spare Parts Kit	M1360-9969	

(*) SLPM = Standard Liters per Minute (**) TMFC = Thermal Mass Flow Controller (***) 0 and 1 TMFC are built with 4-gas manifold for 4 gas mixing
 (*) If product received in 2006 or before, please contact your New Brunswick sales representative for correct part numbers.

BioFlo® 510 and CelliGen® 510 sterilizable-in-place culture systems, 19.5 and 40.0 liters



Bench or mobile system

Standard features

- RPC (Reactor Process Control) Software
- Top-Mounted Drive with Double-Mechanical Seal
- ASME/CE Electropolished Vessel
- Baffles (Standard on BioFlo 510 Fermentation System)
- Load Cell
- Bright, 38.1 cm Industrial Color Touchscreen Controller
- 3-Fixed Speed Pumps
- User-Definable, Sterilization Sequence Program
- Control System Security
- Temperature Control
- Resterilizable Harvest Port
- Ring Sparger
- Inlet/Exhaust Filters
- 7 Analog Inputs and 7 Analog Outputs

Description

BioFlo 510 Fermentors and CelliGen 510 Bioreactors are intermediate systems ideal for pilot through production applications. Compact systems fit on the bench or on optional mobile skid. A modular design and wide variety of standard and optional components provide the flexibility to customize these systems to meet your process requirements.

Product features

- **Applications:** Bacteria, yeast, insect, plant or mammalian cells, in batch, fed-batch or continuous culture
- **Sophisticated control station:** Powerful RPC (Reactor Process Controller) provides integrated control of up to 32 process parameters, trends up to 8 parameters simultaneously, stores up to 10 recipes, and includes built-in security features. (See page 94.) Includes large industrial touchscreen interface with adjustable-position, 38.1 cm (15 in) color display; 3 integrated pumps; 2 USB ports; 7 analog inputs and 7 outputs to add ancillary devices; integrated load cell and more
- **Vessel:** Electropolished 316L stainless-steel, sterilizable-in-place vessels offered in 19.5 & 40.0 liter capacities with 2:1 aspect ratio
- **Impellers:** Fermentor includes (2) Rushton-type impellers, with pitched-blade and marine-blade, option. Bioreactor offers choice of pitched-blade, marine-blade, spin filter, Cell-Lift* or packed-bed basket* impellers (* 40 L only. See page 92)
- **Gas flow control:** Fermentor comes standard with 1 TMFC and a single gas or upgrade to 2 gases with solenoid valves or 2 individual TMFCs. Bioreactor comes standard with 1 TMFC and 4 solenoid valves or upgrade to 4 individual TMFCs. Additional flow and mixing combinations, such as replacing the TMFC with a low-cost Rotameter for manual gas flow control are available. Gas overlay and air-wash systems with choice of flow rates
- **Additional options:** See list below for wide range of options. Related accessories, including BioCommand SCADA Software, gas analyzers, and more are described beginning on page 120

continued on next page

BioFlo® 510 and CelliGen® 510 – ordering information

1. Specify base system vessel size.
2. Select options from the list below.
3. Consult an application specialist for your specific needs.

BioFlo 510 & CelliGen 510 options

Gas flow

- Rotameter:
 - 0-3 SLPM
 - 0-64 SLPM
 - 0-32 SLPM
- Various combinations of 2, 3, or 4 TMFCs:
 - 0.06-3 SLPM
 - 0.6-32 SLPM
 - 0.3-15 SLPM
 - 1-64 SLPM
- Overlay with TMFC (0-15 or 0-32 SLPM)
- Air Wash System with TMFC (0-15 or 0-32 SLPM)
- Overlay Valve only

Exhaust line

- Exhaust Condenser
- Automatic Pressure Control

Impellers

- Rushton Type – Used commonly for robust cell lines such as bacteria, yeast and algae, where maximum OTR is desired. Provided as standard on BioFlo 510 fermentors
- Pitched Blade – Commonly used with mammalian, insect or other shear sensitive cell lines for batch, fed-batch, or continuous cultures. Produces axial and radial mixing
- Pitched Blade with Magnetic Drive – For critical cell culture applications
- Marine Blade – Commonly used with mammalian, insect or other shear sensitive cell lines for batch, fed-batch, or continuous cultures. Produces axial mixing
- Spin Filter – For Suspension or Microcarrier cultures where a dip tube inside the filter withdraws cell media as harvest or waste
- Cell Lift – Specially designed to provide uniform circulation for both Suspension and Microcarrier cultures. Can be used with optional decanting columns for perfusion cultures (40 L only)
- Packed-Bed Basket Impeller – For secreted products from anchorage dependent and suspension cells, this impeller immobilizes cells in a bed of Fibra-Cel® disks to provide extremely high cell densities (40 L only)

Probes

- Single or Redundant pH/DO Control Systems
- Redox Control System
- Foam/Level Detection System

Addition and sampling

- Resterilizable Sample Valve
- Resterilizable Addition Valves (4 max.)
- Resterilizable Addition/Harvest Valve with Dip Tube (2 max.)
- 3.8 cm Sanitary Fitting 7-Port Septum
- Addition Vessels (Glass / Stainless Steel)
- Decanters
- Sterile Sampling Assembly (Kit of 3)

SCADA software (see page 124)

- BioCommand® Track and Trend
- BioCommand Batch Control
- BioCommand Batch Control Plus

Validation

- Basic Package
- Basic Plus Package
- Enhanced Package

Utility regulator & pre-filter kits

- Process Air Pre-Filter/Regulator Kit
- Instrument Air Pre-Filter/Regulator Kit
- Water Pre-Filter/Regulator Kit
- Process Steam Pre-Filter/Regulator Kit
- Utility Steam Pre-Filter/Regulator Kit
- Utility Connection Kit

Additional options

- Allen Bradley™ CompactLogix™ PLC Control System
- Sprayballs for clean-in-place of Vessel
- External Variable Speed Pumps
- External Scales
- 8-Port Serial Controller (RS-232)
- Spare Parts Kits
- Preventative Maintenance Kits
- Mobile Skid
- System Passivation

BioFlo® 610 mobile pilot-plant fermentor, 65 – 125 liters



Description

The BioFlo 610 is a compact, mobile, pilot-plant fermentor for process development and small-scale production. A modular design and wide variety of standard and optional components provide the flexibility to customize the system to meet your process requirements.

Product features

Standard features

- RPC (Reactor Process Control) Software
- Bottom-Mounted Drive with Double-Mechanical Seal
- ASME/CE Vessel
- Baffles (Removable)
- Load Cells
- Bright, 38.1 cm Industrial Color Touchscreen Controller
- 3-Fixed Speed Pumps
- User-Definable, Pressure Hold Sequence Program
- User-Definable, Sterilization Sequence Program
- Control System Security
- Temperature Control
- Resterilizable Harvest Port
- Ring Sparger
- Inlet/Exhaust Filters
- 7 Analog Inputs and 7 Analog Outputs

- **Applications:** Bacteria, yeast, plant, or insect cells, in batch, fed-batch or continuous culture
- **Sophisticated control station:** Powerful RPC (Reactor Process Controller) provides integrated control of up to 32 process parameters, trends up to 8 parameters simultaneously, stores up to 10 recipes, and includes built-in security features. (See page 94.) Includes large industrial touchscreen interface with adjustable-position, 38.1 cm (15 in) color display; 3 integrated pumps; 2 USB ports; 7 analog inputs and 7 outputs to add ancillary devices; integrated load cell and more.
- **Vessel:** 316L stainless-steel, sterilizable-in-place vessels offered in 65 & 125 liter capacities with 3:1 aspect ratio
- **Impellers:** Rushton-style impellers, standard. Pitched-blade and marine-blade, optional
- **Gas flow control:** Single-gas system with Thermal Mass Flow Controller (TMFC) is standard. Replace the TMFC with a low-cost Rotameter, or upgrade by adding a second TMFC for two-gas mixing. Gas overlay valve available
- **Additional options:** See list below for wide range of options. Related accessories, including BioCommand® SCADA Software, gas analyzers and more are described beginning on page 120

continued on next page

BioFlo® 610 – ordering information

1. Specify base system vessel size.
2. Select options from the list below.
3. Consult an application specialist for your specific needs.

BioFlo 610 options

Gas flow control:

- Single Gas
- Two Gas
- Overlay Valve

Gas Flow:

- **Rotameter, 65 L Vessels (Shown in SLPM)**
9.5 - 95
- **Rotameter, 125 L Vessels (Shown in SLPM)**
15.0 - 150
- **1 TMFC, 65 L Vessels (Shown in SLPM)**
1.5 - 75
- **1 TMFC, 125 L Vessels (Shown in SLPM)**
3.0 - 150
- **2 TMFC, 65 L Vessels (Shown in SLPM)**
1.5 - 75 / 0.6 - 32
- **2 TMFC, 125 L Vessels (Shown in SLPM)**
3.0 - 150 / 1.0 - 64

Exhaust line:

- Exhaust Condenser
- Automatic Pressure Control

Impellers:

- Rushton-Type, Standard
- Pitched Blade, Optional
- Marine Blade, Optional

Probes:

- Single or Redundant pH/DO Control Systems
- Redox Control System
- Foam/Level Detection System

Addition and sampling:

- Resterilizable Sample Valve

- Resterilizable Addition Valves (4 Maximum)
- 3.8 cm Sanitary Fitting 7-Port Septum
- Addition Vessels (Glass / Stainless Steel)
- Sterile Sampling Assembly (Kit of 3)

SCADA software (see page 124)

- BioCommand® Track and Trend
- BioCommand Batch Control
- BioCommand Batch Control Plus

Validation

- Basic Package
- Basic Plus Package
- Enhanced Package

Utility regulator & pre-filter kit

- Process Air Pre-Filter/Regulator Kit
- Instrument Air Pre-Filter/Regulator Kit
- Water Pre-Filter/Regulator Kit
- Process Steam Pre-Filter/Regulator Kit
- Utility Steam Pre-Filter/Regulator Kit
- Utility Connection Kit

Additional options

- Sprayballs for clean-in-place of Vessel
- External Variable-Speed Pumps
- External Scales
- 8-Port Serial Controller (RS-232)
- Spare Parts Kits
- Preventive Maintenance Kits
- System Passivation
- Vessel Electropolish
- Low seal pressure switch for double mechanical seal

BioFlo® Pro fermentors and CelliGen® Pro bioreactors, 75 – 3000 liters



BioFlo Pro Fermentor

Standard features

- **Fermentors, all sizes:**
 - 3:1 ratio
 - Bottom-Drive, Double-Mechanical Seal
- **Bioreactors:**
 - 75 - 150 liter, 1.9:1 ratio, Top-Drive, Double-Mechanical Seal
 - 300 liter, 1.6:1 ratio, Top-Drive, Double-Mechanical Seal
 - 650 liter, 2:1 ratio, Bottom-Drive, Double-Mechanical Seal
- Allen Bradley CompactLogix Controller
- 316L ASME code/CE Stainless-Steel Vessel
- Automatic Sterilization Program
- Large, Color, Operator-Interface Terminal
- Open-Frame Piping Skid
- Manual Air-Flow Control
- Safety Features: Headplate Open Interlock, Emergency Stop, Rupture Disk, Jacket Relief Valve
- Automatic Temperature Control
- SIP / CIP Drain Valve
- SIP Inlet / Exhaust Filters
- Automatic Agitation Control
- Resterilizable Harvest Port
- NEMA-4 Rated Electrical Cabinet

(*) 2 maximum for fermentation; 4 maximum for cell culture

The new standard in large-scale customizable bioprocess equipment adheres to cGMP and GAMP guidelines

Description

BioFlo Pro fermentors and CelliGen Pro bioreactors are modular systems designed for quick delivery, dependable operation and system flexibility, all at an affordable price. Pro systems utilize industry-standard components for dependable operation, and an Allen Bradley™ CompactLogix™ programmable-logic controller (PLC) for easy integration into any production facility. The modular design enables multiple options to be added, removed, or changed at any time to meet your various process requirements. Fermentors available in 75, 150, 300, 500, 1000, 1500 & 3000 liter sizes. Bioreactors available in 75, 150, 300 & 650 liter sizes.

Options

- Exhaust line:
- Exhaust Condenser
- Automatic Backpressure Control
- Dual Exhaust Filters (in parallel)
- Single or Dual Exhaust Filters with test integrity ports
-
- Pumps:
- 4 Built-In Fixed-Speed Addition Pumps
- External Variable-Speed Pumps*
-
- Housings/probes:
- pH / DO Probes and Transmitters
- Redox Probe and Transmitter
- Retractable Probe Housings
- Redundant Probe Kits
-
- Foam kits:
- Foam Kit
- High-Foam Kit
- High-High Foam Kit
-
- Filter/regulator kits:
- Process Steam
- Utility Steam
- Water
- Instrument Air
- Utility Connection Kit

continued on next page

BioFlo® / CelliGen® Pro options (continued)

- Sampling
- Sampling Valve (Resterilizable)
- Novaseptum® Sampling System
- Sterile Sampling Assembly (Kit of 3)
-
- Vessel volume/weight
- Vessel Volume via differential pressure
- Load Cells
- Level Probe
-
- Additional accessories
- Clean-In-Place Option (transfer panel/spray balls)
- Cooling by dedicated heat exchanger for chiller
- Low-Seal Pressure Switch for Double-Mechanical Seal
- Thermometer (Digital)
- Electropolish
- Passivation
- Transfer Lines (Resterilizable)
- Utility Connection Kit

- Data recording
- BioCommand® SCADA Software (see page 124)
- (7) Inputs (4-20 mA) for Ancillary Devices
- Delta V™ connectivity
-
- Validation packages
- Basic Validation
- Basic Plus Validation
- Enhanced Validation
-
- Parts kits
- Spare Parts Kits
- Preventative Maintenance Kit

Additional options for BioFlo Pro fermentors only

- Air inlet line
- Thermal Mass-Flow Controller
- Dual-Inlet Air Filters (in series)
- Dual-Inlet Air Filters with test integrity ports
- Gas Overlay
- 2-Gas Mix (O₂ supplementation)
-
- Impellers
- Rushton-Type, Standard
- Pitched Blade, Optional
- Marine Blade, Optional
-
- Addition or inoculation
- Addition Valve (up to 5)
- 7-Port or 12-Port Septums
- Stainless-Steel Addition Vessels – 4 L, 7.5 L, 11 L & 19 L
- Addition-Vessel Scales
- Glass Bottles for Addition/Harvest, 0.25 - 10 L

Additional options for CelliGen® Pro bioreactors only



- Air inlet line
- 4-Gas Mix (CO₂, O₂, N₂ and Air)
- Single Mass-Flow Controller
- 4 Thermal Mass Flow Controllers (CO₂, O₂, N₂ and Air)
- Dual-Inlet Air Filters (in series)
- Dual-Inlet Filters with test integrity ports
- Gas Overlay with TMFC
- Air Wash
-
- Impellers
- Pitched Blade, Standard (Suspension)
- Marine Blade, Optional (Suspension)
- Spin Filter, Optional (Suspension or Microcarrier)
- Cell Lift, Optional (Microcarrier)
- Packed-Bed Basket, Optional (Fibra-Cel® Disks)
-
- Addition or inoculation
- 1.3 cm Addition Valve (up to 3)
- 2.5 cm Addition Valve
- 7-Port or 12-Port Septums
- Stainless-Steel Addition Vessels – 4 L, 7.5 L, 11 L & 19 L
- Glass Bottles for Addition/Harvest, 0.25 - 10 L
- Addition-Vessel Scales

CelliGen Pro Bioreactor

Accessories for New Brunswick fermentors and bioreactors

In addition to the accessories listed here, we can supply a variety of ancillary equipment which can interface with New Brunswick fermentors and bioreactors. Please allow our process engineers to suggest reliable equipment to utilize in your

process development, on-line analysis, up- and down- stream processing. The following section presents only a selected list of the most commonly requested items.

Ordering information

Description	Order no.	
Pumps and Accessories		
Watson-Marlow 520 U/R, large capacity 1-220 rpm variable speed pump with front panel auto/manual control. Accepts external signals up to 60 V or 32 mA for automatic start/stop operation and reversible pumping by remote control, 220-240 V, 50/60 Hz, 100 W	P0620-0921	
Autoclavable connectors		
Resterilizable Quick Connect, 19 mm for SIP units	M1153-9633	
Resterilizable Quick Connect, 25 mm for SIP units	M1153-9639	
Luer-lock Syringe Connector	P0240-5000	
107.95 mm long Hypodermic Needle, 3.26 mm diameter, (12 needles)	P0440-0061A	
Sample vials		
Case of (72) 25 mL Autoclavable Sample Vials, with caps	M1227-9935	
Case of (72) 40 mL Autoclavable Sample Vials, with caps	P0640-0500	
4 L Addition Vessel Kit Assembly includes stainless-steel vessel with dip tube, stainless-steel process valve, silicone tubing and 0.2 µm vent filter	M1290-0550	
Addition vessels (stainless steel)		
7.5 L Additional Vessel Kit	M1290-0551	
11 L Addition Vessel Kit	M1290-0552	
19 L Addition Vessel Kit	M1290-0553	

Variable speed pumps may be remotely controlled using the BioFlo 310, CelliGen 310, BioFlo 510, CelliGen 510, BioFlo Pro, General Purpose Controller or 4-20 mA Interface Box. Call New Brunswick for additional pump information.

Ordering information

Description	Order no.	
Addition / harvest bottle (glass) for aerobic cell culture		
0.25 L Addition / Harvest Bottle Kit Assembly includes a clear Pyrex glass bottle with aseptic reservoir cap including a full length stainless-steel dip tube and 0.2 µm vent filter	M1362-9905	
0.5 L Addition / Harvest Bottle Kit	M1362-9906	
1 L Addition / Harvest Bottle Kit	M1362-9901	
2 L Addition / Harvest Bottle Kit	M1362-9902	
5 L Addition / Harvest Bottle Kit	M1362-9903	
10 L Addition / Harvest Bottle Kit	M1362-9904	
Addition / harvest bottle (glass) for anaerobic cell culture		
0.25 L Addition / Harvest Bottle Kit Assembly includes a clear Pyrex glass bottle with aseptic reservoir cap including (2) full length stainless steel dip tubes and (2) 0.2 µm vent filters – perfect for anaerobic processes	M1362-9913	
0.5 L Addition / Harvest Bottle Kit	M1362-9914	
1 L Addition / Harvest Bottle Kit	M1362-9915	
2 L Addition / Harvest Bottle Kit	M1362-9916	
5 L Addition / Harvest Bottle Kit	M1362-9917	
10 L Addition / Harvest Bottle Kit	M1362-9918	

It is recommended that a 4.76 mm ID silicone tubing (P0740-2505) be ordered to attach the Addition / Harvest bottles to the appropriate hose barb on the fermentation / bioreactor system.

 **Ordering information for other voltage options begins on page 144.**

Accessories for New Brunswick fermentors and bioreactors (continued)

Other accessories for New Brunswick fermentors/bioreactors

Chillers

We can supply chillers for most fermentors/bioreactors. See also page 122.

Steam generators

We can supply utility and clean steam generators for most fermentors/bioreactors in various electrical services.

Sampling probes (cell free)

Withdraws sterile, cell-free samples from bioreactor/fermentor for either off-line or on-line analysis.

Light sources

We offer special cold light sources in wave lengths from 300 - 800 nm and with various illumination intensities.

Biochemistry analyzers

We can assist customers in the selection of off-line or on-line process analysis equipment and interfacing to any New Brunswick fermentor/bioreactor for analysis of glucose, lactate, glutamate, ethanol, sucrose, lactose, galactose, choline, hydrogen peroxide and methanol. Call for detailed information.

Replacement silicone tubing

The numbers in the top half of the chart identify tubing by fermentor/bioreactor model. The lower portion of the chart identifies corresponding part number, I.D. and O.D.

Silicone Tubing (Replacement)								
Fermentor/ Bioreactor	Vessel Size	Gas Connectors	Acid, Base Antifoam, Addition Port	Harvest Tube	Cooling Coil	Single Addition Port	Triple Addition Port	Side Addition Port
BioFlo 115	All	1	8	5	5	5	8	—
BioFlo 310 & CelliGen 310	All	10	8	5	—	5	8	—
Item	I.D.	O.D.	Length		Order no.			
1	2.0 mm	6.4 mm	15.2 m		M0740-3110			
2	3.2 mm	6.4 mm	15.2 m		M0740-3111C3			
3	6.4 mm	9.8 mm	7.6 m		M0740-2542			
4	3.2 mm	6.4 mm	7.6 m		M0740-2445			
5	4.8 mm	8.0 mm	7.6 m		M0740-2505			
6	8.0 mm	11.1 mm	15.2 m		M0740-2590			
7	2.4 mm	6.4 mm	15.2 m		M0740-2430			
8	1.6 mm	4.8 mm	15.2 m		M0740-2396			
9	9.5 mm	16.6 mm	7.6 m		M0740-2721C3			
10	4.1 mm	6.4 mm	7.6 m		M0740-3113C3			

ThermoFlex® recirculating CFC-Free, mobile chiller



Technical specifications

Overall Dimensions H x W x D	69.6 x 36.1 x 62.7 cm
Net Weight	57.2 kg

Description

Recirculating chiller for use with low-to-high density cultures to maintain sub-ambient temperatures.

New Brunswick can also supply chillers for SIP fermentors/bioreactors. Call for details.

Product features

- **Applications:** for use with most New Brunswick benchtop fermentors & bioreactors. Call for details
- **Cooling capacity:** 1170 Watt heat removal capacity for the 230 V, 50 Hz unit, at 20 °C
- **Features:** positive-displacement pump, 7.6 liter reservoir, digital controller display, level indicator, integrated funnel and air filter

Ordering information

Model	Description	Electrical Service	Order no.	
Thermo Scientific Neslab ThermoFlex Recirculating Chiller	ThermoFlex 1400 PD 2, IPR plus PRV	230 V, 50 Hz	P0620-2798	
	Accessories			
	Plumbing Package		P0620-0959	
	Pressure Regulator (0-20 psi)		P0620-2799	
	Pressure Gauge (0-30 psi)		M1287-9918	

Analog Input/Output Module



Description

New Brunswick's new Analog Input/Output Module allows you to easily incorporate process values from auxiliary pumps, transmitters and other 0-5 V or 4-20 mA devices.

Product features

- OPC server interface
- Communicates with OPC-compatible BioCommand® packages for total process control (requires a computer with USB connection)

Technical specifications

Input/Output Types and Quantities

User-Definable	3 inputs
0-5 V or 4-20 mA	3 outputs
0-5 V	4 inputs
	4 outputs

Ordering information

Model	Electrical	Order no.	
Analog Input/ Output Module	100-240 V, 50/60 Hz	M1372-1001	⚡

⚡ Ordering information for other voltage options begins on page 144.

Interface kit for RS-232 device

Description

The RS-232 Device Interface Kit provides the ability to integrate up to eight (8) simple RS-232 devices into your fermentation process to obtain weight measurements, flow rates or other data. This information can be integrated directly into OPC-compatible BioCommand packages for the development of powerful feed strategies based on weights or pump flow rates. The kit includes one USB cable to connect to your PC, one eight-port RS-232 serial box, and OPC server software designed specifically to communicate with BioCommand. This kit is designed to

communicate with Mettler scales which use SICS level 0 communication protocol. Contact your local sales representative for details on connecting to other simple RS-232 devices.

Ordering information

Model	Order no.	
RS-232 OPC Server Kit	M1295-0002	

EX-2000 off-gas oxygen / carbon dioxide monitor



May be wall-mounted, or used on the benchtop. Shown with optional stand.

Technical specifications

Overall Dimensions W x H x D	33 x 41.1 x 20.5 cm
Net Weight	4.1 kg

Description

The EX-2000 gas analyzer provides continuous and unattended monitoring of exhaust carbon dioxide (CO₂) and oxygen (O₂) gasses in benchtop fermentors & bioreactors.

Contact your New Brunswick sales representative for system recommendations.

Product features

- **Applications:** suitable for use with any size fermentor/ bioreactor*
- **Features:** infrared (IR) sensor determines carbon dioxide concentration. Electrochemical sensor monitors the oxygen concentration. Factory calibrated
- **Signal output:** provides 4 - 20 mA output. Requires interfacing into ML-6100 or General Purpose Controller or 4 - 20 mA Multi-Loop Controller with BioCommand® software to allow for visualization and archiving of carbon dioxide and oxygen levels. BioCommand also allows for supervisory control and calculations
- **Construction:** Enclosure material is corrosion-resistant fiberglass (NEMA 12); all external interface-plumbing components are 316 stainless steel. All necessary fittings for tubing and connection are included for out-of-the-box installation

Ordering information

Model	Description	Electrical Service	Order no.	
EX-2000 Off-Gas Oxygen / Carbon Dioxide Monitor	EX-2000 Monitor	100 - 240 V, 50/60 Hz	M1276-0000	
	Accessories			
	Stand for bench mounting		M1276-5000	

(*) For temperature maintenance or for rapid cooling applications in larger fermentors and bioreactors, ask your New Brunswick sales representative for assistance.

We can also recommend and supply a variety of other systems for measurement of exhaust CO₂, O₂ and other gases as well as systems for sample pre-treatment. Call for details on these analyzers and how they can be interfaced with your fermentor/bioreactor and BioCommand bioprocess software.

BioCommand® bioprocessing software – Track and Trend, Batch Control and Batch Control Plus



Description

New Brunswick has developed three next-generation BioCommand® software packages to enhance your ability to monitor, control and log data from your fermentation and cell culture processes through your personal computer (PC). These Supervisory Control and Data Acquisition (SCADA) packages provide the tools needed for research, optimization, and if needed, the security and audit trails to meet your regulatory requirements. All are OPC compatible to enable your fermentor or bioreactor to "talk" to any other OPC-compatible device in your lab or production facility.

Ordering information

Model	Order no.	
BioCommand Track and Trend	M1326-0000*	
BioCommand Batch Control	M1326-0010*	
BioCommand Batch Control Plus	M1326-0020*	
OPC Server	M1291-0011*	

BioCommand Accessories

Description	Order no.	
Connection Kit: Contains one 16 meter RS-422 Serial Cable, one RS-232/RS-422 Converter and one BioCommand Cable. Kit contains M1171-8010, M1286-8010 & P0460-7550 or may also be ordered individually as listed below.	M1286-0100	
16 meter RS-422 Serial Cable. One cable is included with each BioCommand package. Purchase one additional cable for each additional process controller. Multiple cables may be connected for longer lengths. Length each: 16 meters	M1171-8010	
RS-232/RS-422 Converter: Used to convert RS-232 serial pin-out to RS-422 cable connection	P0460-7550	
BioCommand Cable: Converts RS-232 signal to RS-422 to facilitate BioCommand communication with controller.	M1286-8010	
Interface Box: Converts up to eight RS-232 COM ports into USB for customers whose computers lack an RS-232 connection.	M1287-0020	

(*) Includes one M1286-0100 Kit. Order one additional M1171-8010 cable for each additional controller.

BioCommand Track and Trend

This entry-level package has been designed specifically for researchers and scientists requiring basic data management and monitoring capabilities. It provides the ability to trend and control parameter setpoints, establish alarm settings, and produce batch records; and is ideal for basic process management.

BioCommand Batch Control

This intermediate package includes all the capabilities of BioCommand Track and Trend, plus additional enhanced control features including a sophisticated programming module, custom synoptic display window, and equipment lock-out feature. The added control features of this software package make it ideal for optimizing your process.

BioCommand Batch Control Plus

Our premium package includes all of the features of the previous two packages, as well as includes three levels of security, event logs, and audit-trail capabilities to be compatible with the FDA 21 CFR Part 11 electronic signature and electronic batch record requirements. BioCommand Batch Control Plus allows the power of BioCommand software to be utilized in an FDA validated process.

OPC Server

Used to interface and connect OPC-compliant 3rd party equipment to New Brunswick Bioreactors and Fermentors. Included with all BioCommand software packages listed above. Additionally, can be used without BioCommand packages to provide connectivity to 3rd party SCADA such as MATLAB®, LavVIEW® and other OPC-compatible packages.

NucleoCounter® automated cell counters

AVAILABLE IN
NORTH AMERICA ONLY



Compact NucleoCounter & NucleoCounter YC-100 need no maintenance, calibration or cleaning



NucleoView Software automatically calculates cell viability, allows you to view the sample image, and download data to your PC

NucleoCounter automated mammalian cell counter

Designed to automatically count mammalian cells in research and production environments. An integrated fluorescence microscope in the NucleoCounter detects signals from a fluorescent dye, propidium iodide, that is bound to the cells' nuclei. The resulting counts can be total cells or viable cells depending on sample preparation. Each count requires one NucleoCassette® and aliquots of Reagent A100 and Reagent B.

NucleoCounter YC-100 automated yeast cell counter

Designed to automatically count yeast cells in R&D and QC production environments, brewery and biofuels research. Suitable for performing total yeast cell counts as well as estimating viability. An integrated fluorescence microscope in the NucleoCounter detects signals from a fluorescent dye, propidium iodide, that is bound to the cells' nuclei. Suitable for performing total yeast cell counts well as estimating viability. Can be connected to a PC for documentation, data storage and image collection. Each count requires one NucleoCassette™ and aliquots of Reagent YC-100.

Technical specifications*

Overall Dimensions L x D x H	22 x 38 x 26 cm
Net Weight	3 kg
Electrical	Requires 120 VAC

(*) Apply to both NucleoCounter and NucleoCounter YC-100.

NucleoCounter and NucleoCounter YC-100 accessories

Description	Order no.	
NucleoCounter and required accessories		
NucleoCounter , 120 V, 60 Hz	M1293-0000	
Reagent A100 (Lysis Buffer)	P0820-5190	
Reagent B (Stabilization Buffer)	P0820-5180	
Reagent C (Blood Applications)	P0820-5200	
Starter Kit - Includes one bottle of reagent A100 and one bottle of Reagent B, 2 dispensers, reagent holder, 100 NucleoCassettes & NucleoView software	M1293-0020	
NucleoCounter YC-100 and required accessories		
NucleoCounter YC-100 , 120 V, 60 Hz	M1293-1000	
Reagent YC-100	P0820-5185	
NucleoCounter and NucleoCounter YC-100 additional accessories		
NucleoCassettes® – Disposable, plastic sampling iodide, used to count cells when filled with treated sample and inserted into the NucleoCounter. Plunger loading ensures that the correct amount of sample (50 µl) is taken into the cassette with 2 µl delivered to the counting chamber. Cassettes are packaged in foil bags of 10. Sold in quantities of 100 cassettes.	M1293-0100	
QC Test Kit	M1293-0900	
Dispenser Pump – Used to dispense microliter quantities of Reagent A100 and Reagent B	P0820-5179	
Reagent Holder holds two 500 mL Reagent Bottles	P0860-5178	
NucleoView® Software – Enables the user to view the counted cell area and data log the count for future use.	P0540-5440	

Training



Description

Training is available on any New Brunswick fermentors and bioreactors. Training sessions can be set up at your site or can be held at New Brunswick headquarters laboratories in Enfield, CT USA.

Training is designed to assist new and existing users by familiarizing them with the components and operation of their fermentor or bioreactor. Guidance is provided to users on their application. Client-site training is performed only after delivery and setup of the equipment and after utility services have been connected and a New Brunswick service representative has checked the system. For further information, contact your local New Brunswick representative.

Probes for fermentation and cell culture

Description

We can supply spare probes and accessories from among the broad line of Mettler Ingold and Hamilton products. For spare probes, see below and pages 127–131. Directions for using these charts are shown at right.

- pH probes begin on page 128. DO probes begin on page 130.
- Locate your vessel in the left column of the appropriate chart.
- Slide your finger across to the right until you come to a box with a number in it, then look at the top of the column above the number to find the catalog number for that probe. NOTE: Vessels can accommodate more than one type of probe.
- Each time you see a number for a particular vessel, it indicates that probe can be used with that vessel.
- The number inside the box refers to the associated reference charts for cables, adapter, and housings, which follow below.

Redox probes

		Mettler Ingold			Hamilton		
Order no.		P0720-5780	P0720-5781	P0720-5782	P0720-6532	P0720-6531	P0720-6530
Immersion Depth		120 mm	200 mm	325 mm	325 mm	425 mm	625 mm
Vessel Connector		PG 13.5	PG 13.5	PG 13.5	PG 13.5	PG 13.5	PG 13.5
Cable end		K8	K8	K8	K8	K8	K8
Type		Gel	Gel	Gel	Gel	Gel	Gel
BioFlo 110/115	1.3 L & 3 L		1				
BioFlo 110/115	7.5 L			1	1		
BioFlo 110/115	14.0 L					1	
BioFlo 310	2.5 L		2		2		
BioFlo 310	5.0 L & 7.5 L			2	2		
BioFlo 310	14.0 L			2	2		
BioFlo 410/415	7 L			2	2		
BioFlo 410/415	14 L					2	
BioFlo 410/415	19 L						2
BioFlo 510	all vessels	3, 7 & 9					
BioFlo 610	all vessels	3, 7 & 9					
BioFlo Pro	all vessels	4 & 6		4, 5 & 8	4, 5 & 8		

Probes for fermentation and cell culture (continued)

Redox cables and housings

Ref.	Description	Order no.	
Cables referenced in table above			
1	Redox Cable, 110/115	P0720-2763	
2	Redox Cable, BioFlo 310, 410 and 415	P0720-2275	
3	Redox Cable, BioFlo 510	P0720-2277	
4	pH/Redox Cable for BioFlo and CelliGen Pro	M1290-0610	
5	pH/Redox Ground Wire Extension for Retractable Probe Housings (325 mm)	M1290-8012	
Housings referenced in table above			
6	25 mm Ingold Port 12 mm Housing with Material Certificate (BioFlo/CelliGen Pro Only)	P0720-6450C1	
7	25 mm Ingold Port 12 mm Housing with Material Certificate	P0720-6240C3	
8	InTrac [®] 797, Stainless Steel Retractable Probe Housing, 25 mm Ingold Port, 325 mm Probe Length w/ Material Certificate	P0720-5570C	
9	510 Port Adapter – Converts 1.5" Sanitary to 25 mm Ingold Port	M1361-9208	

Redox transmitters

Description	Order no.	
Transmitter, Panel Mount, (required with BioFlo 110/115 Redox probes)	P0620-5974	
Transmitter, Wall Mount, (required with BioFlo 110/115 Redox probes)	P0620-5975	

Probes for fermentation and cell culture (continued)

Optical density (turbidity) and CO₂ probes

Description	Order no.	
Turbidity Probes		
Turbidity Probe, Autoclavable 12 mm/297 mm Length InPro 8100 (Cable not included)	P0720-5950*	
Turbidity Probe, Autoclavable 12 mm/120 mm Length InPro 8100 (Cable not included)	P0720-5951*	
Turbidity Probe, SIP 12 mm/120 mm Length InPro 8200 with Cable	P0720-5961	
Turbidity Probe, SIP 12 mm/205 mm Length InPro 8200 with Cable	P0720-5962	
Turbidity Probe, SIP 12 mm/297 mm Length InPro 8200 with Cable	P0720-5963	
Turbidity Probe, SIP 12 mm/407 mm Length InPro 8200 with Cable	P0720-5960	
Turbidity Accessories		
5M Turbidity Cable	P0720-2430	
Turbidity Transmitter, TRB 8300	P0620-5551	
CO₂ Probes (VP Connector)		
CO ₂ Probe, 12 mm/120 mm length	P0720-6480	
CO ₂ Probe, 12 mm/220 mm length	P0720-6481	
CO ₂ Probe, 12 mm/320 mm length	P0720-6482	
CO₂ Accessories		
M400 CO ₂ Transmitter	Call for details	
CO ₂ Cable	P0720-9660	

(*) Cable not included. Must be ordered separately.

pH probes

		Mettler Ingold				Hamilton	
Order no.		P0720-5581	P0720-5582	P0720-5584	P0720-5580	P0720-5583	P0720-6540
Immersion Depth		120 mm	200 mm	225 mm	325 mm	425 mm	625 mm
Vessel Connector		25 mm	PG 13.5	PG 13.5	PG 13.5	PG 13.5	PG 13.5
Cable end		K9	K9	K9	K9	K9	K9
Type		Gel	Gel	Gel	Gel	Gel	Gel
BioFlo 110 ^a /115 ^b /3000 ^a	1.3 L / 1.6 L		2 ^a /4 ^b				
BioFlo 110 ^a /115 ^b /3000 ^a	3 L			2 ^a /4 ^b			
BioFlo 110 ^a /115 ^b /3000 ^a	7.5 L / 6.6 L				2 ^a /4 ^b		
BioFlo 110 ^a /115 ^b /3000 ^a	14.0 L					2 ^a /4 ^b	
BioFlo 310	2.5 L		3				
BioFlo 310	5.0 L & 7.0 L			3			
BioFlo 310	14.0 L				3		
CelliGen 310	2.5L		3				
CelliGen 310	5.0 L & 7.5 L			3			
CelliGen 310	14.0 L				3		
CelliGen 310 Basket	2.5 L to 7.5 L		3				
CelliGen 310 Basket	14.0 L**			3			
CelliGen Plus	2.2 L		2				
CelliGen Plus	5.0 L & 7.5 L				2		
CelliGen Plus	14.0 L					2	

(**) For CelliGen Plus Probe Adapters, ask your local New Brunswick sales representative.

Probes for fermentation and cell culture (continued)

pH probes (continued)

		Mettler Ingold				Hamilton	
Order no.		P0720-5581	P0720-5582	P0720-5584	P0720-5580	P0720-5583	P0720-6540
Immersion Depth		120 mm	200 mm	225 mm	325 mm	425 mm	625 mm
Vessel Connector		25 mm	PG 13.5	PG 13.5	PG 13.5	PG 13.5	PG 13.5
Cable end		K9	K9	K9	K9	K9	K9
Type		Gel	Gel	Gel	Gel	Gel	Gel
CelliGen Plus Basket	2.2 L**		2				
CelliGen Plus Basket	5.0 L** & 7.5 L**		2				
CelliGen Plus Basket	14.0 L**			2			
BioFlo 410/415	7.0 L				3		
BioFlo 410/415	14.0 L					3	
BioFlo 410/415	19.5 L						3
BioFlo 4500	all vessels	2 & 8			2 & 9		
BioFlo 5000	all vessels	1 & 8			1 & 9		
BioFlo/CelliGen 510	all vessels	4, 8 & 10					
BioFlo 610	all vessels	4, 8 & 10					
BioFlo/CelliGen Pro	all vessels	5 & 7			5, 6 & 9		

(**) For CelliGen Plus Probe Adapters, ask your local New Brunswick sales representative.

pH probe cables & housings

Ref.	Description	Order no.	
Cables referenced in table above			
1	AK9 Cable for BioFlo 5000	P0720-2093	
2	AK9 cable, 3ft, BioFlo IIC, 2000, III, 110, 3000, IV, 4000, 4500, CelliGen and CelliGen Plus	P0720-2095	
3	pH Cable for BioFlo 310, 410, 415 and CelliGen 310	P0720-2273	
4	pH Cable for BioFlo 115, 510 and CelliGen 115, 510	P0720-2276	
5	pH/Redox Cable for BioFlo and CelliGen Pro	M1290-0610	
6	pH/Redox Ground Wire Extension for Retractable Probe Housings (325 mm)	M1290-8012	
Cables for older New Brunswick equipment, not referenced in table above			
	AK9 Cable, 2.4 m. For Micros, MPP, MicroGen (ML-4100), MicroLift, and ML4100	M1131-8010	
	AK9 Cable, Analog For MultiGen, BioFlo I, MicroFerm and MicroGen	P0720-2090	
	pH Cable for BioFlo 6000 (Ingold Probes Only)	M1238-8001	
Housings referenced in table above			
7	25 mm Ingold Port 12 mm Probe Housing with Material Certificate (BioFlo/CelliGen Pro Only)	P0720-6450C1	
8	25 mm Ingold Port 12 mm Probe Housing with Material Certificate	P0720-6240C3	
9	InTrac® 797, Stainless Steel Retractable Probe Housing, 25 mm Ingold Port, 325 mm Probe Length w/ Material Certificate	P0720-5570C	
10	510 Port Adapter – Converts 1.5" Sanitary to 25 mm Ingold Port	M1361-9208	

Probes for fermentation and cell culture (continued)

DO probes

		Mettler Ingold (InPro 6800)							Hamilton
Order no.		P0720-6270	P0720-6280	P0720-6281*	P0720-6580	P0720-6282	P0720-6283	P0720-6284	P0720-6520
Immersion Depth		80 mm	120 mm	160 mm	160 mm	220 mm	320 mm	420 mm	625 mm
Vessel Connector		25 mm	PG 13.5	PG 13.5	PG 13.5	PG 13.5	PG 13.5	PG 13.5	PG 13.5
Cable end		T82	T82	VP	T82	T82	T82	T82	T82
BioFlo 110 ^a / 3000 ^b	1.3 L / 1.6 L			3 ^{a+b} /1 ^b					
BioFlo 110 ^a /3000 ^b	3.0 L / 3.3 L					1 ^{a+b} /11 & 14 ^b			
BioFlo 110 ^a /3000 ^b	7.5 L / 6.6 L						1 ^{a+b} /12 & 14 ^b		
BioFlo 110 ^a /3000 ^b	14.0 L							1 ^{a+b} /13 ^b	
BioFlo 115	1.3 L				6				
BioFlo 115	3.0 L					6			
BioFlo 115	7.5 L						6		
BioFlo 115	14.0 L							6	
BioFlo 310	2.5 L / 5.0 L					5			
BioFlo 310	7.5 L / 14.0 L						5		
CelliGen 310	2.5 L / 5.0 L					5			
CelliGen 310	7.5 L / 14.0 L						5		
CelliGen Plus**	2.2 L					1 & 13			
CelliGen Plus**	5.0 L					1			
CelliGen Plus**	7.5 L						1		
CelliGen Plus**	14.0 L							1 & 13	
CelliGen Plus ^a /310 ^b (Basket Only)	2.2 L / 2.5 L		1 & 13 ^a /5 ^b						
CelliGen Plus ^a /310 ^b (Basket Only)	5.0 L		1 ^a /5 ^b						
CelliGen Plus ^a /310 ^b (Basket Only)	7.5 L					1 ^a /5 ^b			
CelliGen Plus ^a /310 ^b (Basket Only)	14.0 L					1 ^a /5 ^b			
BioFlo 410/415	7.0 L						5		
BioFlo 410/415	14.0 L							5	
BioFlo 410/415	19.5 L								5
BioFlo 4500	all vessels	1 & 8	1 & 8				1 & 9		
BioFlo 5000	all vessels	2 & 8	2 & 8				2 & 9		
BioFlo/CelliGen 510	all vessels		6, 8 & 10						
BioFlo 610	all vessels		6, 8 & 10						
BioFlo/CelliGenPro	all vessels		4 & 7				4 & 9		

(*) 1L BioFlo 110 probes require a VP connector cable, P0720-2332, or probe adapter P0720-6470.

(**) For CelliGen Plus Probe Adapters, ask your local New Brunswick sales representative.

Probes for fermentation and cell culture (continued)

DO cables, housings and accessories (plus pH general accessories)

Ref.	Description	Order no.	
Cables referenced in table on previous page			
1	DO Cable, BioFlo IIC, III, 3000, 4000, IV, 4500, 110 (except 1.6 L) and CelliGen Plus	P0720-2331	
2	DO Cable, BioFlo 5000, Micros, MicroLift, MPP and ML-4100	M1131-8009	
3	DO Cable, BioFlo 110 (1.3 L) & BioFlo III/3000 (1.6 L)	P0720-2332*	
4	DO Cable, BioFlo and CelliGen Pro	P0720-2342	
5	DO Cable, BioFlo 310, 410, 415 and CelliGen 310	P0720-2333	
6	DO Cable, BioFlo 115 and 510	P0720-2336	
Housings referenced in table on previous page			
7	25 mm Ingold Port 12 mm Probe Housing with Material Certificate (BioFlo®/CelliGen® Pro Only)	P0720-6450C1	
8	25 mm Ingold Port 12 mm Probe Housing with Material Certificate	P0720-6240C3	
9	InTrac® 797, Stainless Steel Retractable Probe Housing, 25 mm Ingold Port, 325 mm Probe Length w/ Material Certificate	P0720-5570C	
10	510 Port Adapter – Converts 1.5" Sanitary to 25 mm Ingold Port	M1361-9208	
Adapters referenced in table on previous page			
11	PG13.5 Thread Adapter for 3/8" NPT port	M1016-0900	
12	PG13.5 Thread Adapter for 3/8"NPT port, 92.07 mm	M1226-9446	
13	DO Port Length Extender (same threads), 42.86 mm	M1176-9540	
Adapters not referenced in table on previous page			
	DO Port Length Extender (same threads), 76.99 mm	M1176-9575	
	DO Port Length Extender (same threads), 82.55 mm	M1176-9579	
Gasket referenced in table on previous page			
14	Gasket for probe adapters M1016-0900 & M1226-9446	M1016-0890	
DO Accessories, Mettler Ingold not referenced in table on previous page			
	DO Cable, 3 meters for Mettler Model 4500	P0720-2560	
	DO Cable, 5 meters for Mettler Model 4500	P0720-2561	
	DO probe cap	P0720-5567	
	DO Membrane Kit for Inpro 6000. Includes four membranes, O-rings, & 25 mL electrolyte	P0720-6268	
	DO Membrane Kit for Inpro 6000. Includes one membrane, O-rings, & 25 mL electrolyte	P0720-6339	
	Probe Adapter, converts T-82 to VP connector	P0720-6470*	
pH & DO General Accessories, not referenced in table on previous page			
	pH & DO Simulator/Calibrator. For checking integrity of pH & DO electronics & cables	P0720-5631	

(*) 1L BioFlo 110 probes require a VP connector cable, P0720-2332, or probe adapter P0720-6470.

CEPA® High-speed centrifuges – for liquid separation and solids removal

NOT SOLD IN EUROPE
(EXCEPT UK)

Description

The CEPA centrifuges described in this catalog are designed for rapid cell removal and clarification of fermentation broth and similar liquid-solid mixtures in "clarifying" configurations; or for the separation of two liquids in "separating" configurations. Models range from a small lab unit, through large production-scale systems capable of processing up to 3,000 L/hr. All use bottom feed, retain solids in the bowl and expel supernatant from upper tray(s). All wetted surfaces are stainless steel (except optional silicone bottom valve). All floor models feature 3-phase electric motors for rapid acceleration. Basic configurations include one bowl, ancillary equipment¹, and tools. Virtually all combinations of options are available on all models in all voltages.²

LE benchtop model laboratory centrifuge

All model LEs feature variable speed and digital tachometer. Recommended for separating 2 - 15 liters. Maximum throughput rate is 30 L/hr.

Z41 floor model centrifuge

Recommended for laboratory or pilot-scale volumes of 20 - 75 L. Maximum throughput rate is 500 L/hr.

Z61 floor model centrifuge

Recommended for pilot-scale volumes of 30 - 200 L. Maximum throughput rate is 1,500 L/hr.

Z81 production floor model centrifuge

Recommended for pilot and production process volumes of 100 - 500 L. Maximum throughput rate is 2,000 L/hr.

Z101 production floor model centrifuge

As powerful as the Z81, and with a 25 % larger cylinder capacity, Z101 is typically used with 150 - 600 L process volumes. Maximum throughput rate is 3000 L/hr.

Model	Specifications	Recommended accessories	
LE	Power: 330 Watts ³ Bowl Volume: 0.25 L Rotational Speed: 15,000 - 45,000 rpm Max Acceleration: 50,000 G Height: 68.3 cm	Spare Parts Kit: XLE-SP1 Extra clarifying cylinders Adjustable separating cylinders Cooling Coils	
Z41	Power: 0.9 kW ³ Bowl Volume: 2 L Rotational Speed: 20,000 rpm Max Acceleration: 17,000 G Height: 117 cm	Spare Parts Kit: X41-SP1 Extra clarifying cylinders Extra separating cylinders Cooling Coils	
Z61	Power: 1.5 kW ³ Bowl Volume: 6 L Rotational Speed: 17,000 rpm Max Acceleration: 18,000 G Height: 155 cm	Spare Parts Kit: X61-SP1 Extra clarifying cylinders Extra separating cylinders Cooling Coils	
Z81	Power: 2.2 kW ³ Bowl Volume: 8 L Rotational Speed: 16,000 rpm Max Acceleration: 18,000 G Height: 155 cm	Spare Parts Kit: X81-SP1 Extra clarifying cylinders Extra separating cylinders Cooling Coils	
Z101	Power: 2.2 kW ³ Bowl Volume: 10 L Rotational Speed: 14,000 rpm Max Acceleration: 15,500 G Height: 160 cm	Spare Parts Kit: X81-SP1 Extra clarifying cylinders Extra separating cylinders Cooling Coils	

(1) Ancillary equipment, which varies with the model, includes various cleaning tools such as special brushes and other implements.

(2) Maximum throughput shown was obtained with water. Throughput will decrease with thicker or more viscous cultures.

(3) Various voltages available.

continued on next page

CEPA® High-speed centrifuges – optional features

Clarifying bowl

Retains solids such as biomass and discharges liquid through single-level upper discharge ports.

Separating bowl

Separates liquids of different densities, retains solids and discharges liquids through bi-level upper discharge ports.

Closed bowl (non-continuous)

For precise sediment determination of measured charges. Contains no feed or discharge lines.

Emulsifying bowl

For emulsification of two liquids.

Adjustable separating bowl

A separating cylinder with interchangeable separating rings for optimizing performance with different liquid combinations.

Bottom valve

Centrifugally actuated silicone rubber valve prevents centrifuge contents from emptying when cylinder rotation is stopped. The valve prevents feed input when rotational speeds are less than 80 % of maximum.

Cooling coil

Stainless steel. Allows circulation of cold water or other coolants to lower the temperature of the cylinder's contents during centrifugation.

Enclosed models

CEPA centrifuges are available mounted in cast-metal chambers with stainless steel-clad interiors. Sealed by a sturdy door the enclosure facilitates quieter operation, control of gaseous environment at atmospheric pressure.

HEMA configuration

CEPA centrifuges can be supplied with serum-clarifying cylinders and full length cooling coils for blood fractionation.

Explosion proof

For use where risk of explosion exists.

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Disposal of electrical devices



The disposal of electrical devices is regulated within the European Community by national regulations based on EU Directive 2002/96/EC on waste electrical and electronic equipment (WEEE).

According to these regulations, any devices supplied after 13.08.05 in the business-to-business sphere, to which this product is assigned, may no longer be disposed of in municipal or domestic waste. They are marked with the following symbol to indicate this.

Article numbers for different mains voltage versions



The following products are available in the listed mains voltage versions. For mains voltage versions for which no separate article number is listed

(code number –), the valid article numbers are also those listed in the first column or in the product description. The versions marked n.a. are not available.

Power Supply	230 V, 50 Hz	120 V, 60 Hz	208–230 V, 60 Hz	120–220 V, 60 Hz
Freezers				
HEF U410 , Upright Freezer	U9260-0008	U9260-0007	n. a.	n. a.
HEF U570 , Upright Freezer	U9270-0008	U9270-0007	n. a.	n. a.
HEF C660 , Chest Freezer	U9250-0008	n. a.	U9250-0007	n. a.
U725-G , Green Upright Freezer				
Air-Cooled	U9440-0005	n. a.	n. a.	n. a.
Water-Cooled	U9440-0004	n. a.	n. a.	n. a.
Innova U101 , Upright Freezer	U9420-0001	U9420-0000	n. a.	n. a.
Innova U360 , Upright Freezer	U9425-0001	U9425-0000	n. a.	n. a.
Innova U535 , Upright Freezer	U9430-0001	U9430-0000	U9430-0002	n. a.
Innova U725 , Upright Freezer	U9440-0001	n. a.	U9440-0002	n. a.
Innova C585 , Chest Freezer	U9400-0001	U9400-0000	U9400-0002	n. a.
Innova C760 , Chest Freezer	U9410-0001	n. a.	U9410-0002	n. a.
Premium U410 , Upright Freezer	U9260-0001	U9260-0000	U9260-0002	n. a.
Premium U570 , Upright Freezer	U9270-0001	U9270-0000	U9270-0002	n. a.
Premium C340 , Chest Freezer	U9230-0001	U9230-0000	n. a.	n. a.
Premium C660 , Chest Freezer	U9250-0001	n. a.	U9250-0002	n. a.
CO₂ Back-up , Innova Freezers	U9043-0004	n. a.	n. a.	U9043-0002
LN₂ Back-up , Innova Freezers	U9044-0004	n. a.	n. a.	U9044-0002
CO₂ Back-up , Premium Freezers	U9043-0008	n. a.	n. a.	U9043-0006
LN₂ Back-up , Premium Freezers	U9044-0008	n. a.	n. a.	U9044-0006

Article numbers for different mains voltage versions

Power Supply	230 V, 50 Hz	120 V, 60 Hz	100 V, 60 Hz	100 V, 50 Hz
Shakers				
Innova 40, Incubator Shaker				
1.9 cm orbit	M1299-0082	M1299-0080	M1299-0081	M1299-0083
2.5 cm orbit	M1299-0092	M1299-0090	M1299-0091	M1299-0093
Innova 40R, Incubated/Refrigerated Shaker				
1.9 cm orbit	M1299-0086	M1299-0084	M1299-0085	M1299-0087
2.5 cm orbit	M1299-0096	M1299-0094	M1299-0095	M1299-0097
Innova 42, Stackable Incubator Shaker				
1.9 cm orbit	M1335-0002	M1335-0000	M1335-0001	M1335-0003
2.5 cm orbit	M1335-0012	M1335-0010	M1335-0011	M1335-0013
Innova 42R, Stackable Incubator/Refrigerated Shaker				
1.9 cm orbit	M1335-0006	M1335-0004	M1335-0005	M1335-0007
2.5 cm orbit	M1335-0016	M1335-0014	M1335-0015	M1335-0017
Innova 43, Stackable Incubator Shaker				
2.5 cm orbit	M1320-0002	M1320-0000	M1320-0001	M1320-0003
5.1 cm orbit	M1320-0012	M1320-0010	M1320-0011	M1320-0013
Innova 43R, Stackable Incubator/Refrigerated Shaker				
2.5 cm orbit	M1320-0006	M1320-0004*	M1320-0005*	M1320-0007
5.1 cm orbit	M1320-0016	M1320-0014*	M1320-0015*	M1320-0017
Innova 44, Stackable Incubator Shaker				
2.5 cm orbit	M1282-0002	M1282-0000	M1282-0001	M1282-0003
5.1 cm orbit	M1282-0012	M1282-0010	M1282-0011	M1282-0013
Innova 44R, Stackable Incubator/Refrigerated Shaker				
2.5 cm orbit	M1282-0006	M1282-0004	M1282-0005	M1282-0007
5.1 cm orbit	M1282-0016	M1282-0014	M1282-0015	M1282-0017
I 26, Stackable Incubator Shaker				
2.5 cm orbit	M1324-0002	M1324-0000	M1324-0001	M1324-0003
I 26R, Stackable Incubator/Refrigerated Shaker				
2.5 cm orbit	M1324-0006	M1324-0004	M1324-0005	M1324-0007
Excella 24, Incubator Shaker				
1.9 cm orbit	M1352-0002	M1352-0000	M1352-0001	M1352-0003
Excella 24R, Incubated/Refrigerated Shaker				
1.9 cm orbit	M1352-0006	M1352-0004	M1352-0005	M1352-0007
Excella 25, Incubator Shaker				
2.5 cm orbit	M1353-0002	M1353-0000	M1353-0001	M1353-0003

* Temperature range: 20 °C below ambient to 80 °C

Article numbers for different mains voltage versions

Power Supply	230 V, 50 Hz	230 V, 50/60 Hz	220/230 V, 50/60 Hz	230/240 V, 50/60 Hz	
Shakers					
Excella 25R , Incubated/Refrigerated Shaker					
2.5 cm orbit	M1353-0006	n. a.	n. a.	n. a.	
Excella E10 , Open Air Shaker					
2.5 cm orbit	n. a.	M1351-0001	n. a.	n. a.	
Excella E5 , Open Air Shaker					
1.9 cm orbit	n. a.	M1355-0001	n. a.	n. a.	
Excella E2 , Open Air Shaker					
1.9 cm orbit	n. a.	M1350-0001	n. a.	n. a.	
Excella E1 , Open Air Shaker					
1.9 cm orbit	n. a.	M1354-0001	n. a.	n. a.	
C76 , Water Bath Shaker					
1.3 cm orbit	n. a.	n. a.	n. a.	M1248-0003	
Innova 3100 , Water Bath Shaker					
1.3 cm orbit	n. a.	n. a.	M1231-0002	n. a.	
Innova 2000 , Open Air Shaker					
1.9 cm orbit	n. a.	n. a.	M1190-0002	n. a.	
Innova 2050 , Open Air Shaker					
1.9 cm orbit	n. a.	n. a.	M1190-0012	n. a.	
Innova 2100 , Open Air Shaker					
1.9 cm orbit	n. a.	n. a.	M1194-0002	n. a.	
Innova 2150 , Open Air Shaker					
1.9 cm orbit	n. a.	n. a.	M1194-0012	n. a.	
Innova 2300 , Open Air Shaker					
2.5 cm orbit	n. a.	n. a.	M1191-0002	n. a.	
5.1 cm orbit	n. a.	n. a.	M1191-0022	n. a.	
Innova 2350 , Open Air Shaker					
2.5 cm orbit	n. a.	n. a.	M1191-0012	n. a.	
5.1 cm orbit	n. a.	n. a.	M1191-0032	n. a.	
Innova 5000 , Multi-Tier Shaker					
5.1 cm orbit	n. a.	n. a.	M1196-0002	n. a.	
Innova 5050 , Rack System					
	n. a.	n. a.	n. a.	M1232-0101	
Innova 5051 , Rack Extension					
	n. a.	n. a.	n. a.	M1232-0111	

Article numbers for different mains voltage versions

	240 V, 50/60 Hz	120 V, 60 Hz	120 V, 50/60 Hz	100/120 V, 50/60 Hz	100 V, 60 Hz	100 V, 50 Hz	100 V, 50/60 Hz
	n. a.	M1353-0004	n. a.	n. a.	M1353-0005	M1353-0007	n. a.
	n. a.	n. a.	n. a.	M1351-0000	n. a.	n. a.	n. a.
	n. a.	n. a.	n. a.	M1355-0000	n. a.	n. a.	n. a.
	n. a.	n. a.	n. a.	M1350-0000	n. a.	n. a.	n. a.
	n. a.	n. a.	M1354-0000	n. a.	n. a.	n. a.	n. a.
	n. a.	n. a.	M1248-0002	n. a.	n. a.	n. a.	n. a.
	M1231-0003	n. a.	M1231-0000	n. a.	n. a.	n. a.	M1231-0001
	M1190-0003	n. a.	M1190-0000	n. a.	n. a.	n. a.	M1190-0001
	M1190-0013	n. a.	M1190-0010	n. a.	n. a.	n. a.	M1190-0011
	M1194-0003	n. a.	M1194-0000	n. a.	n. a.	n. a.	M1194-0001
	M1194-0013	n. a.	M1194-0010	n. a.	n. a.	n. a.	M1194-0011
	M1191-0003	n. a.	M1191-0000	n. a.	n. a.	n. a.	M1191-0001
	M1191-0023	n. a.	M1191-0020	n. a.	n. a.	n. a.	M1191-0021
	M1191-0013	n. a.	M1191-0010	n. a.	n. a.	n. a.	M1191-0011
	M1191-0033	n. a.	M1191-0030	n. a.	n. a.	n. a.	M1191-0031
	M1196-0003	n. a.	M1196-0000	n. a.	n. a.	n. a.	M1196-0001
	n. a.	n. a.	n. a.	M1232-0100	n. a.	n. a.	n. a.
	n. a.	n. a.	n. a.	M1232-0110	n. a.	n. a.	n. a.

Article numbers for different mains voltage versions

Power Supply	230 V, 50/60 Hz	120 V, 50/60 Hz
Galaxy CO₂ Incubators		
Galaxy 170R		
CO ₂ Galaxy Incubator	CO170R-230-0000	CO170R-120-0000
CO ₂ Galaxy Incubator, High-Temp Disinfection	CO170R-230-1000	CO170R-120-1000
CO ₂ Galaxy Incubator, with O ₂ Control (1–19 %)	CO170R-230-0200	CO170R-120-0200
CO ₂ Galaxy Incubator, High-Temp & O ₂ Control	CO170R-230-1200	CO170R-120-1200
Galaxy 170S		
CO ₂ Galaxy Incubator	CO170S-230-0000	CO170S-120-0000
CO ₂ Galaxy Incubator, High-Temp Disinfection	CO170S-230-1000	CO170S-120-1000
Galaxy 48R		
CO ₂ Galaxy Incubator	CO48R-230-0000	CO48R-120-0000
CO ₂ Galaxy Incubator, High-Temp Disinfection	CO48R-230-1000	CO48R-120-1000
CO ₂ Galaxy Incubator, with O ₂ Control (1–19 %)	CO48R-230-0200	CO48R-120-0200
CO ₂ Galaxy Incubator, High-Temp & O ₂ Control	CO48R-230-1200	CO48R-120-1200
Galaxy 48S		
CO ₂ Galaxy Incubator	CO48S-230-0000	CO48S-120-0000
Galaxy 14S		
CO ₂ Galaxy Incubator	CO14S-230-0000	CO14S-120-0000
CO ₂ Galaxy Incubator, with O ₂ Control (1–19 %)	CO14S-230-0200	CO14S-120-0200

Power Supply	220/230 V, 50/60 Hz	120 V, 50/60 Hz
Tissue culture roller drums		
TC-7	M1053-4005	M1053-4004
TC-8	M1053-5005	M1053-5004

Article numbers for different mains voltage versions

Power Supply	200–240 V, 50/60 Hz	100–120 V, 50/60 Hz
Fermentors / Bioreactors		
BioFlo 115 Advanced Fermentation Kit*		
1.3 L with HB	M1369-1151	M1369-1121
1.3 L with WJ	M1369-1161	M1369-1111
3.0 L with HB	M1369-1152	M1369-1122
3.0 L with WJ	M1369-1162	M1369-1112
7.5 L with HB	M1369-1155	M1369-1125
7.5 L with WJ	M1369-1165	M1369-1115
14.0 L with HB	M1369-1150	M1369-1130
14.0 L with WJ	M1369-1160	M1369-1120
BioFlo 115 Basic Fermentation Kit*		
1.3 L with HB	M1369-1141	M1369-1101
1.3 L with WJ	M1369-1631	M1369-1621
3.0 L with HB	M1369-1142	M1369-1102
3.0 L with WJ	M1369-1632	M1369-1622
7.5 L with HB	M1369-1145	M1369-1105
7.5 L with WJ	M1369-1635	M1369-1625
14.0 L with HB	M1369-1140	M1369-1110
14.0 L with WJ	M1369-1640	M1369-1630
BioFlo 115 Advanced Cell Culture Kit*		
1.3 L with HB – Magnetic Drive	M1369-1401	M1369-1201
1.3 L with HB – Direct Drive	M1369-1501	M1369-1301
1.3 L with WJ – Magnetic Drive	M1369-1171	M1369-1211
1.3 L with WJ – Direct Drive	M1369-1371	M1369-1311
3.0 L with HB – Magnetic Drive	M1369-1402	M1369-1202
3.0 L with HB – Direct Drive	M1369-1502	M1369-1302
3.0 L with WJ – Magnetic Drive	M1369-1172	M1369-1212
3.0 L with WJ – Direct Drive	M1369-1372	M1369-1312
7.5 L with HB – Magnetic Drive	M1369-1405	M1369-1205
7.5 L with HB – Direct Drive	M1369-1505	M1369-1305
7.5 L with WJ – Magnetic Drive	M1369-1175	M1369-1215
7.5 L with WJ – Direct Drive	M1369-1375	M1369-1315
14.0 L with HB – Magnetic Drive	M1369-1410	M1369-1210
14.0 L with HB – Direct Drive	M1369-1510	M1369-1310
14.0 L with WJ – Magnetic Drive	M1369-1170	M1369-1220
14.0 L with WJ – Direct Drive	M1369-1370	M1369-1320

* Footnotes:

HB = Heat Blanket, WJ = Water Jacket, WM = Watson Marlow
All volumes shown are Total Volume

Article numbers for different mains voltage versions

Power Supply	200-240 V, 50/60 Hz	100-120 V, 50/60 Hz	100-240V, 50/60 Hz	
Fermentors / Bioreactors				
Fermenter BioFlo 310*				
2.5 L Standard Pre-configured System	M1287-1174	M1287-1170	n.a.	
5.0 L Standard Pre-configured System	M1287-1175	M1287-1171	n.a.	
7.5 L Standard Pre-configured System	M1287-1176	M1287-1172	n.a.	
14.0 L Standard Pre-configured System	M1287-1177	M1287-1173	n.a.	
Custom configurations, Voltage	M1287-1020	M1287-1020	n.a.	
310 Cabinet for use with BioFlo 3000 Vessel	M1287-1005	M1287-1003	n.a.	
Adapter Kit – BLU Vessel to Applikon Controller with P100 Motor, 5 L	n.a.	n.a.	n.a.	
Adapter Kit – BLU Vessel to Applikon Controller with P100 Motor, 14 L	n.a.	n.a.	n.a.	
Adapter Kit – BLU Vessel to CelliGen 310 Controller, 5 L	n.a.	n.a.	n.a.	
Adapter Kit – BLU Vessel to CelliGen 310 Controller, 14 L	n.a.	n.a.	n.a.	
CelliGen 310 Bioreactor*				
2.5 L Standard Pre-configured System	M1287-1264	M1287-1260	n.a.	
5.0 L Standard Pre-configured System	M1287-1265	M1287-1261	n.a.	
7.5 L Standard Pre-configured System	M1287-1266	M1287-1262	n.a.	
14.0 L Standard Pre-configured System	M1287-1267	M1287-1263	n.a.	
Custom configurations, Voltage	M1287-1010	M1287-1020	n.a.	
310 Cabinet for use with CelliGen Plus Vessel	M1287-1004	M1287-1002	n.a.	
BioFlo 415 Fermentor*				
7.0 L Standard Pre-configured System	M1360-1120	n.a.	n.a.	
14.0 L Standard Pre-configured System	M1360-1121	n.a.	n.a.	
19.5 L Standard Pre-configured System	M1360-1123	n.a.	n.a.	
For BioFlo/CelliGen 510, 610, Pro & BLU	Contact your sales representative			
Pumps				
WM Pump, 520 U/R, Variable Speed	n.a.	n.a.	n.a.	
Masterflex, Variable Speed, Easy-Load Pump	n.a.	n.a.	n.a.	
Ancillary Fermentation Accessories				
ThermoFlex Mobile Chiller	n.a.	n.a.	n.a.	
Analog Input/Output Module	n.a.	n.a.	M1372-1001	
EX-2000 Off-Gas Oxygen/Carbon Dioxide Monitor	n.a.	n.a.	M1276-0000	

* Footnotes:
 HB = Heat Blanket, WJ = Water Jacket, WM = Watson Marlow
 All volumes shown are Total Volume

Article numbers for different mains voltage versions

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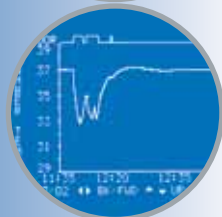
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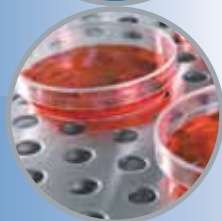
Notes



- In-door viewing window



- Automated data logging & graphing



- Perforated shelves



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